



## Department of Energy

Washington, DC 20585

January 20, 2011

The Honorable Peter S. Winokur  
Chairman  
Defense Nuclear Facilities Safety Board  
625 Indiana Avenue, NW, Suite 700  
Washington, DC 20004-2901

Dear Mr. Chairman:

On October 22, 2010, the Defense Nuclear Facilities Safety Board (Board) forwarded a staff issue report concerning a review by your staff of activity-level work planning and execution at the Waste Isolation Pilot Plant (WIPP). The letter requested a report outlining actions taken or planned by the Department of Energy (DOE) to address the work planning and control deficiencies identified during the review.

DOE has taken action to address the issues identified by your staff. The enclosed corrective action plan summary provides the actions planned or taken by WIPP personnel. These corrective actions have been discussed with your staff during its development and have been reviewed and found acceptable by the Carlsbad Field Office. Also, the briefing you requested to address the actions taken or planned on deficiencies in work planning and control is tentatively scheduled for February 10, 2011.

If you have any questions, please contact me or Kenneth G. Picha, Jr., Acting Deputy Assistant Secretary for Safety and Security Program, at (202) 586-5151.

Sincerely,

A handwritten signature in cursive script that reads "Inés R. Triay".

Inés R. Triay  
Assistant Secretary for  
Environmental Management

Enclosure



## WIPP SUMMARY OF CORRECTIVE ACTIONS PLANNED

### Activity Level Work Planning and Execution

The Carlsbad Field Office (CBFO) is reviewing activities associated with the improvements completed, on-going and planned for the Waste Isolation Pilot Plant (WIPP) site work planning and control program improvement. The actions being taken by Washington TRU Solutions (WTS) on behalf of the WIPP site are targeted to not only address the items specifically identified by the Defense Nuclear Facilities Safety Board (Board), but designed to address the work planning and control program holistically. WTS has chartered a work control improvement team to develop and implement this improvement plan. The work control and improvement team includes WTS project personnel from multiple disciplines, URS Inc., corporate support from across the Department of Energy (DOE) complex and subcontractor subject matter experts (SMEs). This team represents a URS corporate level initiative for improvements in work activity planning and work control. The Work Control Improvement Plan (WCIP) has been developed to address issues in the work control process as identified by the Board during a review of work planning and control at the WIPP site from July 13-15, 2010. This plan provides necessary actions to ensure that work is adequately scoped, hazards are identified and hazard controls are implemented. It will also provide the actions required to clearly define the roles and responsibilities of SMEs supporting the development and approval of the WIPP project Work Documents.

The scope of the WCIP includes a complete rewrite of the current work control procedure WP 10-WC3011 followed by the development and approval of an Implementation Plan (IP) to capture the changes required for related procedures and training. The actions in the WCIP will be tracked to completion using the WIPP Commitment Tracking System (CTS). The complete re-write of the WP 10-WC3011 for improved integration and planning, combined with the Office of Safety Operations Assurance (EM-22) Corrective Action Plan (CAP) and procedure improvement initiative will result in procedure development that supports field implementation and execution.

Interim actions to prevent recurrence included a pause period to re-enforce the core functions of the Integrated Safety Management System (ISMS) for WIPP site personnel and a cross functional Hazard Review Team (HRT) chartered to review the hazard identification and mitigation actions of every work package before it is released to work. Additionally, documented authorization must be obtained by facility operations for every work package that is to be worked in a shift prior to release and lead work group supervision must provide a task brief for each task to be worked for each shift. A maintenance Implementation Verification Review (IVR) will be performed by WTS personnel with oversight by CBFO to evaluate the effectiveness of the actions taken upon completion of the corrective actions implemented by the WCIP.

## **General Findings**

WTS acknowledges the observations noted and improvement opportunities involving activity level work planning to ensure a full implementation of Integrated Safety Management (ISM) as provided by the Board to Dr. Inés Triay in a letter dated October 22, 2010. WTS identified an expansive scope of work in the development of the WCIP to address the information provided in the letter, including the development of an IP to capture the scope of training and procedures for project personnel. To ensure improved implementation of ISM while working the WCIP, WTS has implemented the following compensatory measures focused on ISM:

- **Hazard Review Team:** Established a multi-discipline team to provide independent review of each technical work document for ISM elements as well as mentoring and feedback to work group supervisors prior to making a package available for work authorization. The HRT has reviewed greater than 2000 work packages to date and rejected approximately 8 percent due to scope definition, hazard identification or hazard mitigation not meeting established criteria for the HRT (completed on November 3, 2010).
- **Work authorization reinforcement:** Delineated coordination of work authorization for each activity, including surface and underground, between the surface Facility Shift Manager (FSM) and Underground Services Engineer (completed on November 3, 2010).
- **Pre-job brief enhancements:** Completion of ISM core functions (define work scope-analyze hazards-develop and implement controls-perform work- feedback and improvement) required for each activity to reinforce the application of ISM principles to the workforce (completed on November 3, 2010).
- **Field presence for performance monitoring and coaching:** Increased participation utilizing Monitored Observed Evolutions (MOE) for Operations personnel and application of targeted Senior Supervisory Watch (SSW). (On-going- initiated on November 16, 2010).

## **Define the Scope of Work**

Near-term actions to ensure that work planning instructions adequately define the scope and boundaries of work activities include:

- A multi-disciplined HRT was established on November 3, 2010, to review every work package for scope refinement prior to its release to the field for work. Hazard analysis for each task at the activity level is evaluated to ensure that every work activity has been thoroughly evaluated for all hazards, that mitigating actions are adequate for all hazards identified and the scope is bounded in accordance with ISM principles. Packages with inadequate scope, hazard identification or mitigation are returned to planning. An example is a work package for roof bolting in the underground that was revised as a result of the HRT review to significantly reduce the scope of work and define realistic work

suspension criteria to ensure that the package does not remain open for an extended period of time (on-going).

- The WTS Maintenance organization has completed a comprehensive review of the Skill of Craft Program for each maintenance zone at the WIPP site. The review was an interim action to assess the current program and revise as necessary the schedule for completion of the action items from the WCIP. The review identified actions to revise applicable zone program documents to add, delete, or clarify implementation of ISM elements for Skill of Craft work scope. The review was completed on December 10, 2010. The actions identified for the applicable zone program are on-going and will be included in the roll-out of the WCIP as applicable.
- Clarified the definition for the scope of work for all work control packages as part of the re-write for work control procedure WP 10-WC3011. Completed on December 31, 2010.

The WCIP has been developed and work control procedure WP 10-WC3011 has been re-written to define the boundaries of maintenance types (i.e., Fix-It-Now, Minor Maintenance, Expedited Work, Planned Work). The WCIP (Rev. 0) was approved December 3, 2010. Work control procedure WP 10-WC3011 was approved on December 31, 2010, to bound the scope of changes to the document, but will not be issued for use until completion of the actions outlined in the WCIP. Further revision of WP 10-WC3011 may be required due to the results of WTS' involvement in the URS corporate and Energy Facility Contractors Group (EFCOG) Work Planning and Control (WPC) initiatives. The effective date for use will coincide with completion of the IP and IVR process.

- Per the WCIP and the WTS Corrective Action Plan developed to address the Board concerns, WTS completed a review and benchmark of SSW processes from other DOE sites as well as a gap analysis against current SSW guidance, training and qualification per procedure WP-04-CO.01-1. The review resulted in the development of procedure WP 04-AD3031, Monitoring Operational Activities. The procedure captures the processes of SSW as well as MOE. The procedure was implemented on December 31, 2010.

### **Identify Hazards and Implement Controls**

- Procedure WP 12-IS3002, *Job Hazard Analysis Performance and Development*, requires that Job Hazard Analyses (JHAs) performed for new equipment, new processes, new hazardous activities, or new subcontractor work should include the involvement of a team consisting of a representative of the craft, a Safety and Health Department professional and the cognizant manager. JHAs are developed, reviewed and approved with input from multiple disciplines such as Industrial Safety, Fire Protection, Radiological Control, management, and/or other experts, based on the identified hazards. The input and participation by discipline, including the performance of team JHAs and field walkdowns, is implemented on a graded-approach based on the scope and complexity of a job. This graded-

approach is similar to other graded approach processes at WIPP such as functional classification (Safety Class/Safety Significant/Balance of Plant), maintenance type (Corrective /Preventive /Minor) and Pre-job Briefs. A multi-discipline standing JHA Committee was established in April 2009 to develop, implement and oversee strategies related to re-engineering the JHA process used at WIPP. The process was reengineered and completed implementation in August 2010. The JHA committee is performing a programmatic review, based on Board input, to refine criteria for "team" hazard analysis, evaluate hazard recognition training, evaluate hazard mitigation strategies to eliminate generic direction, and identify other improvement opportunities. Improvement examples already being addressed include more specific direction for controls such as prescribed personal protective equipment (PPE) in lieu of previous direction such as "see Material Safety Data Sheet (MSDS)" (planned completion on January 31, 2011).

- The WCIP has been developed and work control procedure WP 10-WC3011 has been rewritten to define the roles, responsibilities, authority and accountability in the work control process for work package development, review, and approval by SME. Maintenance and Safety are conducting an evaluation to determine the need for additional JHA Training for personnel involved in the planning functions such as maintenance engineers and SMEs (planned for completion by January 31, 2011). Training courses SAF-650 (Hazard Recognition and Accident Prevention) and SAF-207 (JHA training) will be revised and expanded based on the results of the evaluation with completion requirements captured as part of the WCIP IP. Additional training identified by the evaluation will be integrated into the JHA program through the JHA committee (scheduled completion will be identified based on the results of needs analysis to be completed by January 31, 2011).
- The standing JHA committee will continue to assess program elements and drive improvement through collaborative efforts involving WTS personnel as well as personnel from other DOE sites, such as Hanford, given the shared software based systems for hazard analysis currently in use.
- Specific examples identified in the letter to Dr. Triay have been addressed as follows:
  1. The specific JHAs supporting Remote Handled (RH) waste emplacement have been revised to include radiological hazards.
  2. The maintenance work package that referenced one chemical vs. two as well as generic statements for being familiar with MSDS versus prescriptive identification of PPE was completed, therefore no further action is required. Issues identified regarding MSDS verbiage are being addressed by the standing JHA committee.
  3. RH waste handling procedure precaution and limitation statements are being addressed as part of procedure improvement initiatives currently in

progress during the site maintenance outage. As a point of note, other waste processing procedures are also included in this scope (scheduled to be complete by January 31, 2011). The JHA for erecting bulkheads was evaluated July 20, 2010, to ensure it addressed hazards and controls associated with forklift use while erecting bulkheads. The JHA captures the hazards associated with erecting steel and credits the forklift operation qualification process for use of the forklifts such as load center and placement of forks for a load. Because these items are part of the training and qualification process, they are not specifically written into the work instruction. However, the WCIP initiatives involving hazard controls and disposition of such will be evaluated. This evaluation will include input from the URS corporate initiative to ensure consistency in the defined criteria, identifying which controls should be embedded into work instructions (i.e., Precautions and Limitations vs. specific steps) versus controls that may be captured during pre-job briefs (i.e., wind, rain, heat, cold, etc.). The projected completion date will be directly tied to the EFCOG recommendations and approval for use.

### **Perform Work Within Controls**

In response to the observations noted regarding procedural noncompliance, the Board was informed on the first day of the review that procedure improvement initiatives were in progress, but incomplete, as a result of the March 2010 audit conducted by EM-22. As such, the specific evolutions observed during the review involved procedures yet to be completed through the procedure improvement process. Since the July 2010 review by the Board, procedure related actions identified within the EM-22 CAP have been completed for Continuous Use procedures as well as clarification of wording for performing steps concurrently versus sequentially, where applicable. In addition, a subsequent action was recently added to the CAP as an output of a waste technician driven pilot initiative involving the re-write of a TRU Package Transporter Model II (TRUPACT-II) waste processing procedure. The scope of this action is also captured in the procedure improvement initiatives in progress during the current maintenance outage. Prior to resuming waste processing activities, a Pause Period will be conducted with waste handlers and other project personnel to re-enforce the scope of procedure revisions, procedure compliance, ISM principles, etc. Because the EM-22 CAP captures the related procedure improvements regarding procedure compliance issues, no specific additional actions are being tracked as a result of the Board review. WTS believes the procedure improvement initiatives; reinforcement of verbatim procedure compliance; reinforcement of ISM principles; and field presence for performance monitoring via MOE and targeted SSW will correct the procedure noncompliance issues and reinforce the practice of stopping an evolution to address changed conditions or procedure inadequacies. CBFO supports this approach and will monitor the status of its implementation and provide feedback for correction through the Contracting Officer Representative (COR) and the Contracting Officer (CO) when appropriate.

Specific examples identified in the letter to Dr. Triay have been addressed as follows:

1. Contact Handled waste handling procedure WP 05-WH1011, CH Waste Processing, involving the manipulation of a valve to isolate the vacuum pump suction to obtain a stable gauge reading has been revised.
2. The Radiation Control Technician that performed a contact dose rate versus a 30 cm dose rate as required by the procedure received individual counseling. In addition, reinforcement of this requirement was provided to the Radcon organization.
3. Communication strategies were implemented during the Board review to address communication improvements for RH waste processing between the surface and the service room. In addition, this procedure is part of the procedure improvement initiative in progress during the current maintenance outage. The procedure improvement initiative is scheduled for completion by the end of January 2011.
4. The RH waste emplacement procedure change to prevent damage to the Facility Cask Transfer Car power cable was communicated to the operating crews as are other procedure changes. Clarification as to the reason for the change was provided to each crew. In addition, engineering evaluation and design reviews have been completed to assess the potential for damage involving the cable and cable reel. The evaluation identified the current configuration as the lowest risk approach.

### **Feedback and Improvement**

As discussed above, the WCIP and EM-22 CAP capture the essence of improvements necessary to demonstrate full implementation of ISM for activity level work planning and execution. In addition, compensatory measures currently in place, such as the completion of the ISM core functions (define work scope – analyze hazards – develop and implement controls – perform work – feedback and improvement) for each activity, also address implementation of ISM, including the completion of the “feedback” portion of ISM for work activities. The WCIP (Rev 0) was approved December 3, 2010. The EM-22 CAP was issued. All the actions of the EM-22 CAP are complete with the exception of effectiveness reviews of the actions completed as a result of the EM-22 CAP, scheduled for completion by February 28, 2011. Actions to be conducted as part of the WCIP are projected to continue until June 30, 2012, due to the need to conduct an effectiveness review to provide feedback and continual improvement from the WCIP.

Field presence to provide coaching, mentoring and reinforcement of expectations are being executed through the use of MOEs and SSW. The observations noted regarding SSW have been addressed through the development of an Operations procedure (WP 04-AD3031) specifically targeting field presence through utilization of MOEs and SSW. Improvement in the definition of roles and responsibilities for SSW were addressed under “Defining the Scope of Work” above.

## **Material Condition**

The individual pieces of equipment noted in the letter as faulty machinery that halted operations have been repaired and returned to service. As part of the return to service for specific equipment in RH processing, an engineering evaluation was conducted regarding condensate moisture and potential impact to the equipment. The evaluation determined the electrical design and installation of the main active components are protected against moisture. In addition, the design of the Pyle plugs are such that if a short were to occur the associated active component located on the cask will not function and the cask will remain in a safe configuration. All actions related to the Adjustable Center of Gravity Lift Fixture (ACGLF) issue are tracked separately under ORPS (EM-CAFO--WTS-WIPP-2010-0007) using the WTS Commitment Tracking System with seven of 10 actions complete.

The effectiveness of WTS' maintenance management system was assessed in-depth by WTS senior management. The output of the review is summarized below:

Acknowledging the operating reality and challenges with ageing, obsolete, and unique equipment, and a plant designed as a pilot with limited life, WTS and CBFO have embraced the opportunities to improve the site's capability to maintain as well as upgrade plant infrastructure and waste processing systems to accommodate the present desired mission for increased throughput and extended life. This commitment will ensure the site's operating capability for years to come, which in turn demonstrates the level of ownership and stewardship by DOE and its subcontractors to maintain the WIPP as a national asset.

Several WIPP site initiatives regarding equipment reliability and improvement are listed below with numerous items complete and implemented while other actions are ongoing and being tracked to completion separately, therefore no specific additional actions are being tracked as a result of the Board review. Examples include:

- Revised equipment repair processes
  - Integrated review and priority at each Plan of the Day;
  - Prioritization and binning for each Action Request;
  - Implemented model work order strategies;
  - Aligned Master Equipment List functional classifications with Documented Safety Analysis;
  - Graded Approach implementation; and
  - Unreviewed Safety Question procedure revision.
- Operations and Engineering integration
  - Focus on material condition repair and upgrade projects;
  - Single integrated equipment list for funding and priority; and
  - System Health Reporting strategies.
- Completed Fire Water system upgrades, including numerous Post-Indicator Valve replacements and system isolation capabilities to allow system maintenance without system shutdown and subsequent impact to waste processing.



- Completed long term (6-8 weeks) holiday maintenance outages in 2008-2010. The CBFO and WTS commitment for this dedicated window each fall was coordinated through the National TRU Program to balance the priorities of TRU waste processing, and maintenance and upgrade of the WIPP site. In addition, WTS implemented an Outage Planning process that also allows for completion of key maintenance initiatives throughout each calendar year during defined periods in which TRU waste shipments are prohibited (i.e., Memorial Day, tribal holidays, etc.).  
On-going (to be completed by October 31, 2011):
- American Reinvestment and Recovery Act (ARRA)
  - Spare parts fabricated and/or procured for mission critical equipment.
  - Numerous infrastructure, waste handling and mining equipment upgrades and/or replacements. A few examples include:
    - Replacement of 860 underground ventilation fans;
    - Continuous miner;
    - Mining haul trucks;
    - Waste handling transporters and forklifts;
    - Horizontal Emplacement Machine (HEM), replaces existing Horizontal Emplacement and Retrieval Equipment - HERE);
    - Light Weight Facility Cask (to use with HEM);
    - Waste Hoist controls; and
    - Facility Transfer Vehicle to provide back up for the Conveyance Loading Room Car.

The information provided above demonstrates a mindset and commitment toward continuous improvement by challenging the status quo and developing alternative strategies and processes to improve facility operations. As such, WTS believes the maintenance management system is effective. WTS is also committed to remain focused on initiatives to ensure continuous improvement of the maintenance management system. Specifically, WTS is providing the foundation for a URS corporate initiative to drive consistency and improvement in activity level work planning and control across the DOE complex given the URS presence. This initiative is also being coordinated with EFCOG on work planning and control improvements.

### **CBFO**

CBFO agrees with the need for improvement to the WIPP Maintenance Planning and Work Control program. In March 2010, CBFO Office of Site Operations (OSO) initiated a Focused Areas of Concern program to address areas of concern starting with DOE O 5480.19, Conduct of Operations (which has subsequently been superceded by DOE O 422.1 issued on June 29, 2010, and following with DOE O 433.1B, Maintenance Management Program for DOE Nuclear Facilities. CBFO has been working with WTS through an Integrated Project Team approach to implement Conduct of Operations for the site. This implementation is still in progress. The next scheduled area of concern for CBFO Office of Site Operations (OSO) to focus on has been identified as Work Planning

and Control. The progress that WTS has made resulting from the Board site visit of July 13-15, 2010, will provide accelerated opportunity for value added oversight. CBFO has the following oversight actions identified:

- A position has been created to oversee the work control and planning implementation as well as supervisory responsibilities of the Facility Representatives (FR) and EMPDC electrical engineer at the WIPP site. The position requires a fully qualified FR. The responsibilities of this individual will be detailed in a new position description and performance plan. The position will report to the Director, Office of Site Operations.
- The entire OSO staff, which includes Technical Qualification Program (TQP) qualified Safety System Oversight (SSO) personnel and two recently TQP qualified FR will continue to provide oversight functions specifically focused on work planning and control.
- Work Control Document review of two per week per FR to verify effectiveness of contractor's mitigative activity is adequate and effective until full implementation of proposed modifications are in place.
- Oversight of the contractor's WCIP process and implementation.
- CBFO Implementation Verification Review to verify contractor's implementation of the WCIP and associated corrective actions.
- Contractor's Work Planning and Control Program review, once the WCIP is implemented and effective by evaluation against the specific criteria of the guidelines from the April 7, 2010, DOE Memorandum, "Subject: Work Planning and Control Program Guidelines".
- Additionally, the CBFO has begun conducting scheduled senior management walkthroughs to enhance DOE visibility at the site and improve coordination with the FR.

The CBFO relies on the contractor ISMS process to ensure that safety is incorporated throughout the work planning and control process. To ensure that the ISMS is functioning as intended, the CBFO, as required by DOE-EM, performs annual assessments of the contractor's implementation. The CBFO ISM reports for 2009 and 2010 included a review of over 40 CRADs specific to the WIPP site. The assessments were performed by qualified FR, SSO Engineers, and Safety Professionals. Areas for improvement that are identified in the assessments, are evaluated and actions are taken to further improve the program. Additionally, by maintaining a significant on site presence, DOE interfaces with WTS and maintains close contact with all aspects of work conducted at the site. This is being enhanced by the addition of a third FR to the program with a primary focus on work controls (as discussed above). CBFO intends to continue to strengthen its oversight of the work control process and help promote better adherence to the ISM principles.

**Waste Isolation Pilot Plant (WIPP) WORK CONTROL IMPROVEMENT PLAN SUMMARY**  
**Activity Level Work Planning and Execution Summary**

CBFO believes that initiating a full ISMS verification at this point in the solicitation for a new Management and Operation (M&O) contractor for the WIPP site would be counterproductive. However, the need for a complete ISM verification will be evaluated after the new M&O contractor is in place for the WIPP site in September 2012.