



# **Independent Assessment of Work Planning and Control for Cleanup Operations at the West Valley Demonstration Project**

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## Acronyms

AHA	Activity Hazards Analysis
CAS	Contractor Assurance System
CFR	Code of Federal Regulations
CHBWV	CH2M HILL BWXT West Valley, LLC
CIH	Certified Industrial Hygienist
CRAD	Criteria Review and Approach Document
DOE	U.S. Department of Energy
DOE-WVDP	DOE WVDP Field Office
DPO	Differing Professional Opinion
EA	Office of Enterprise Assessments
ECAM	Environmental Continuous Air Monitor
ES&H	Environment, Safety and Health
ECP	Employee Concerns Program
EHSS	Office of Environment, Health, Safety and Security
EM	Office of Environmental Management
eTQP	Electronic Technical Qualification Program
FR	Facility Representative
HIM	Hazard Identification and Mitigation
HMG	Hazard Mitigation Guide
IH	Industrial Hygiene
IMRB	Issues Management Review Board
ISM	Integrated Safety Management
ISMS	Integrated Safety Management System
IWP	Industrial Work Permit
MPPB	Main Plant Process Building
MWR	Minor Work Request
NFPA	National Fire Protection Association
OFI	Opportunity for Improvement
OITS	Open Items Tracking System
POD	Plan of the Day
PPE	Personal Protective Equipment
RCT	Radiological Control Technician
SME	Subject Matter Expert
SOP	Standard Operating Procedure
SOTW	Skill of the Worker
SSPT	Safety and Site Programs Team
TQP	Technical Qualification Program
WIP	Work Instruction Package
WP&C	Work Planning and Control
WVDP	West Valley Demonstration Project

# INDEPENDENT ASSESSMENT OF WORK PLANNING AND CONTROL FOR CLEANUP OPERATIONS AT THE WEST VALLEY DEMONSTRATION PROJECT

## Executive Summary

The U.S. Department of Energy (DOE) Office of Enterprise Assessments (EA) conducted an independent assessment of work planning and control (WP&C) at the West Valley Demonstration Project (WVDP) in October and November 2022. This assessment focused on the CH2M HILL BWXT West Valley, LLC's (CHBWV's) WP&C process for cleanup operations at the Main Plant Process Building (MPPB), elements of the CHBWV contractor assurance system, and the DOE WVDP Field Office (DOE-WVDP) oversight processes for WP&C.

EA identified the following strengths, including one best practice:

- In support of the safe open-air demolition of the MPPB, CHBWV has developed and implemented unique and robust radiological and industrial hygiene (IH) controls as well as dust suppression methods, daily limits on demolition rate and ground waste accumulation, continuous real-time environmental air monitoring in a dedicated control room, and fixed air sampling and deposition surveys. These controls provide early detection of potential contaminant migration beyond posted work area boundaries. (Best Practice)
- CHBWV appropriately incorporated lessons learned from its prior demolition experience and from other demolition projects across the DOE complex in the development of their demolition work instruction package (WIP).
- CHBWV has established an appropriate WP&C framework to support the implementation of the core functions of its integrated safety management system (ISMS) during cleanup activities.
- Since the previous 2018 EA Assessment, CHBWV has made significant improvements in the analysis and control of IH hazards during open-air demolition. CHBWV has developed appropriate monitoring and sampling plans to assess worker exposures that are supported by an appropriately qualified IH subject matter expert (SME).
- CH2M Hill BWXT West Valley, LLC requires long-term subcontractors to perform work in accordance with the site's established work control practices and procedures. This practice fully integrates subcontractors into site processes and eliminates potential conflicts with practices subcontractors use on non-DOE projects.
- CHBWV's training program supports WP&C efforts through appropriate workforce training and qualification processes. For example, the WVDP PROJT (*Proficiency Demonstrations and Formal On-the-Job-Training*) is a unique CHBWV training initiative that combines proficiency demonstrations with formal on-the-job training.
- DOE-WVDP has procedures that establish the functions, responsibilities, authorities, and processes for conducting safety oversight and supplements its overall approach to oversight with contracted radiological technical support.

EA also identified some weaknesses, including one finding, as summarized below:

- CHBWV does not have a documented electrical safety program, increasing the risk of employees being improperly trained in potential electrical hazards, safe work practices, and the use of personal protective equipment. (Finding)

- CHBWV's activity hazards analysis (AHA) process had programmatic and implementation weaknesses. Programmatically, it does not ensure adequate task hazard analysis or tailoring of needed controls to specific work activities, resulting in some missed hazards and controls.
- CHBWV performed painting and elevated work tasks outside the scope of an approved minor work request (MWR) and did not issue a new MWR which would have documented verbal hazard control directions from CHBWVs IH.
- CHBWV did not use their issues management system to properly manage or resolve the four deficiencies identified in the 2018 EA Work Planning and Control Assessment report.
- CHBWV performed work outside of hazard controls: radiological air sampling procedure compliance was not adequate in ensuring that air flow was properly verified after re-starting air samplers following filter checks, a generator powering a radiological air sampler was fueled while running, and some air sampling equipment was missing required calibration stickers.

In summary, CHBWV has established generally effective WP&C mechanisms that support its environmental cleanup mission and the safe open-air demolition of the MPPB. However, EA observed weaknesses with programmatic requirements in electrical safety and design and implementation of the AHA and MWR processes, as well as some aspects of industrial safety and radiological procedure compliance. DOE-WVDP has adequate procedures to conduct oversight functions and supplements the field office with SME contractors to support its program. However, neither DOE-WVDP nor CHBWV ensured that the safety deficiencies identified in the 2018 EA assessment were addressed in their issues management systems. Until the concerns identified in this report are addressed, some workplace hazards may not be properly identified or controlled, resulting in inadequate protection of workers' safety and health during cleanup work at WVDP.

# **INDEPENDENT ASSESSMENT OF WORK PLANNING AND CONTROL FOR CLEANUP OPERATIONS AT THE WEST VALLEY DEMONSTRATION PROJECT**

## **1.0 INTRODUCTION**

The U.S. Department of Energy (DOE) Office of Worker Safety and Health Assessments, within the independent Office of Enterprise Assessments (EA), conducted an assessment of work planning and control (WP&C) for cleanup operations performed by CH2M HILL BWXT West Valley, LLC (CHBWV) at the West Valley Demonstration Project (WVDP). EA began planning calls and document collection in September 2022 and conducted the assessment on site October 31 – November 3 and November 14-16, 2022.

Consistent with the *Plan for the Independent Assessment of Work Planning and Control for Cleanup Operations at the West Valley Demonstration Project, October 2022*, this assessment evaluated the effectiveness of CHBWV’s implementation of integrated safety management (ISM) core functions (define the scope of work, identify and analyze hazards, identify and implement controls, perform work safely within controls, and provide feedback and make improvements) with respect to planning and control of the Main Plant Process Building (MPPB) cleanup activities. The cleanup activities included the open-air demolition of the MPPB and the disposal of hazardous debris. The assessment included an evaluation of the control of a broad suite of workplace hazards with an emphasis on industrial hygiene (IH). Additionally, the assessment evaluated the effectiveness of CHBWV’s contractor assurance system (CAS), as well as CHBWV’s flowdown of the integrated safety management system (ISMS) to subcontractors and sub-tier contractors. EA also evaluated the effectiveness of Federal oversight provided by the DOE WVDP Field Office (DOE-WVDP).

## **2.0 METHODOLOGY**

The DOE independent oversight program is described in and governed by DOE Order 227.1A, *Independent Oversight Program*, which is implemented through a comprehensive set of internal protocols, operating practices, assessment guides, and process guides. This report uses the terms “best practices, deficiencies, findings, and opportunities for improvement (OFIs)” as defined in the order.

As identified in the assessment plan, this assessment considered objectives and criteria from DOE Guide 226.1-2A, *Federal Line Management Oversight of Department of Energy Nuclear Facilities*, app. D, *Activity Level Work Planning and Control Criterion Review and Approach Documents with Lines of Inquiry*. EA used elements of CRAD EA-30-07, Rev. 0, *Federal Line Management Oversight Processes*, to collect and analyze data on DOE-WVDP oversight activities related to WP&C. EA also used objectives and criteria from EA CRAD 32-03, Rev. 1, *Industrial Hygiene Program*; EA CRAD 32-10, Rev. 0, *Construction Safety*; EA CRAD 30-09, Rev. 0, *Occupational Radiation Protection Program*; and EA CRAD 30-01, Rev. 1, *Contractor Assurance System*.

EA observed the planning and implementation of 51 onsite work activities associated with cleanup activities at WVDP. EA examined key activity-level work control documents, such as WP&C plans and procedures, activity hazard analyses (AHAs), work instruction packages (WIPs), manuals, analyses, and policies. EA also interviewed key personnel responsible for developing and executing the associated programs and walked down relevant portions of specific facilities.

Appendix A lists the members of the assessment team, the Quality Review Board, and management responsible for this assessment.

EA previously assessed WP&C at WVDP, as documented in *Office of Enterprise Assessments Assessment of the West Valley Demonstration Project Work Planning and Control Program, October 2018*, hereafter referred to as the 2018 EA Assessment. This current EA assessment examined the completion and effectiveness of corrective actions for the finding and deficiencies cited in the previous assessment. Results of the corrective action assessment are discussed in sections 3.3 and 3.5 of this report.

### 3.0 RESULTS

#### 3.1 Work Planning and Control Institutional Programs

This portion of the assessment evaluated CHBWV's WP&C program documents, staffing, training, and subcontracts.

##### WP&C Program Documents

CHBWV WP&C requirement documents are generally well written and implement the guiding principles and core functions of ISM in accordance with DOE Policy 450.4A, *Integrated Safety Management Policy*. ISM and worker safety and health are appropriately addressed in WVDP-310, *West Valley Demonstration Project Integrated Safety Management System (ISMS) Description*; WVDP-585, *Worker Safety and Health Plan*; WV-19012(a), *General Safety, Health and Security Rules for On-Site Services*; and WVDP-19012(b), *Special Safety, Health, and Security Rules for On-Site Services*. The CHBWV safety, IH, and radiation protection programs provide thorough programmatic requirements and procedures that enable proper identification and analysis of industrial safety, IH, and radiological hazards and required controls.

The two main WP&C procedures, WVDP-485, *Work Control*, and WV-921, *Hazard Identification and Analysis*, supported by other WP&C documents, provide a generally adequate framework for proper implementation of the core functions of ISM. WVDP-485 appropriately describes the use of WIPs, standard operating procedures (SOPs), and minor work requests (MWRs); defines skill of the worker (SOTW); and provides an appropriate *Approved Routine Work List*. WV-921 adequately provides a hazard mitigation guide for hazardous situations, corresponding controls, training, required permits and forms, and lists hazard control documents. In addition, WIPs are developed in accordance with EP-5-002, *Administration of Work Instruction Packages*, and SOP 00-54, *Minor Work Request*, which adequately describes limitations and appropriately bounds the scope of work for minor work hazards and controls for MWRs are also appropriately detailed in SOP 00-54 attachments.

Although WP&C institutional programs are generally adequate, EA identified the following programmatic weaknesses:

- Contrary to DOE Acquisition Regulation 48 CFR 970.5223-1, (b)(6), *Integration of Environment, Safety, and Health Into Work Planning and Execution*; WVDP-310, sec. 11.0; and WV-921, CHBWV's AHA process does not ensure adequate task-specific hazard analysis or tailoring of needed controls to specific work activities. (See **Deficiency D-CHBWV-1**.) Not performing appropriate task-based hazard identification and analysis resulted in missed hazard controls, as discussed further in section 3.2 of this report. Although WV-921 appropriately defines the hazard identification and mitigation (HIM) process, the WV-3909, *AHA Form*, is not task-based as required by WV-921.

- Contrary to 10 CFR 851.23(a)(14), 2018 Technical Amendment; National Fire Protection Association (NFPA) 70E-2015, *Standard for Electrical Safety in the Workplace*, sec. 110.1(A); 10 CFR 851 Appendix A.10, *Electrical Safety*; and DOE Order 440.1B, Attachment 1, Section 9, *Electrical Safety*, CHBWV does not have a documented overall electrical safety program. (See **Finding F-CHBWV-1.**) The lack of a documented electrical safety program could result in employees being improperly trained in potential electrical hazards, unsafe work practices, and the use of personal protective equipment (PPE). The review of CHBWV WP&C institutional program documents showed that most of the electrical safety elements are scattered among many work control documents. CHBWV is currently developing a document that encompasses NFPA 70E requirements.

## Staffing

The CHBWV environment, safety and health (ES&H) program is generally adequately staffed with qualified and experienced professional and technical personnel, a number of whom have many years of work experience in construction and decontamination and decommissioning (D&D) operations. Some of these personnel also have extensive historical knowledge of the facility, providing valuable perspective in support of D&D planning. However, there is only one qualified senior industrial hygienist on site and no qualified backup. The current CHBWV ES&H organization chart identifies three open safety and IH technician positions, and several safety and IH technicians are early in the qualification process. Shortage of qualified and fully trained safety and IH staff has resulted in occasional delays in providing necessary hazard and control guidance to the WP&C process. (See **OFI-CHBWV-1.**)

## Training

CHBWV's training program, described in WVDP-126, *Performance Based Training Program Manual*, supports WP&C efforts through appropriate workforce training and qualification processes. For example, the WVDP PROJTs (*Proficiency Demonstrations and Formal On-the-Job-Training*) is a unique CHBWV training initiative that combines proficiency demonstrations with formal on-the-job training. CHBWV radiological control personnel have appropriately developed and used PROJTs to provide specific training for radiological control technicians (RCTs) in the proper implementation of unique MPPB demolition radiological controls specified in the MPPB WIP. Specifically, PROJTs RS190T, *ECAM Monitoring, and Demolition Control Room*, provides training and trainee practice for the "Control Room" RCTs who are responsible for monitoring data trends and demolition activities.

The AHA process described in WV-921 is led by trained and qualified work planners and appropriately involves craft workers, management, and ES&H subject matter experts (SMEs) to identify hazards and controls. The qualification process for CHBWV work planners is appropriately documented on TR1486Q, *Work Planning Training Requirements Validation Checklist*. A review of TR1486Q for work planners verified the successful completion of all necessary training activities and qualifications to perform work specified in the checklist.

CHBWV developed and implemented HS629B, *Industrial Hygiene Training Study Guide*, to ensure the quality and consistency of safety and health technician training. The guide is comprehensive and covers all areas of IH practice. A review of four safety and health technician PROJTs training records showed that the training is performance based, comprehensive, and validated by senior safety and health management. Heavy equipment operators were appropriately trained and qualified for the equipment used. Additionally, demolition equipment operators had extensive demolition experience. CHBWV electrical staff demonstrated appropriate knowledge of the requirements for electrical safety, including employee training requirements, safe work practices, PPE, and lockout/tagout.



## **Subcontracts**

CHBWV subcontracts are adequately structured to clearly establish the scope of subcontractor activities. Primary subcontracts with American Demolition and Nuclear Decommissioning, Inc. and InTomes Technical Services, Inc. appropriately require work to be performed in accordance with the site ISMS, 10 CFR 851, *Worker Safety and Health Program*, and CHBWV work control practices and procedures. CHBWV effectively supports subcontractors and oversees their performance in the areas of radiological controls and safety and health. Interviewed subcontractor employees demonstrated that they are knowledgeable and compliant with CHBWV site safety and health programs (e.g., exposure monitoring, medical monitoring, PPE programs, and ES&H training).

## **Work Planning and Control Institutional Programs Conclusions**

CHBWV's WP&C framework is generally well documented with program plans and detailed implementing procedures, consistent with DOE Policy 450.4A. Well-trained and knowledgeable staff, many with significant experience at the site, support the WP&C programs. However, CHBWV's AHA process does not ensure adequate task-specific hazard analysis or tailoring of needed controls to specific work activities. In addition, CHBWV does not have a documented electrical safety program document as required.

### **3.2 Work Planning and Control Implementation**

This portion of the assessment evaluated CHBWV's implementation of the WP&C institutional programs through the core functions of ISM: defining the scope of work, identifying and analyzing hazards, developing and implementing hazard controls, and performing work within controls.

#### **Defining the Scope of Work**

Five of the six reviewed CHBWV activity-level work control documents provided detailed work scopes. The work control documents were developed under the CHBWV WP&C process and were generally sufficiently detailed to permit analysis of hazards and specification of necessary controls. For example:

- The scope of work for the MPPB demolition is well detailed in WIP W1904751, *Main Plant Process Building Demolition*. The WIP adequately covers scope, precautions and limitations, materials and equipment, prerequisites, performance instructions, and post-performance requirements. In addition, WIP W1904751, app. A, *MPPB Demolition Plan*, contains an appropriately detailed, step-by-step approach to the demolition of MPPB structures, arranged with computer-aided design drawings showing each area to be demolished in sequence and the associated demolition techniques and precautions, including radiological, IH, and waste considerations.
- The work scope for WIP W2201820, *Demolition Equipment Repair*, is supported by precautions and limitations and adequately bounds the work to be performed.
- SOP 00-54 adequately describes limitations and appropriately bounds the scope of work by limiting revision of issued MWRs to changes that do not exceed minor work original scope boundaries. MWR W2204112, *Assemble and Inspect Quarry Saw*, and W2204495, *Fabricate fork pockets and weld to the Echidna ACS75R Excavator Rail Saw shipping frame in VTF*, adequately describe the work scope and tasks for the work.
- SOP 09-36, *Low Level Waste Processing*, provides an appropriate work scope, including instructions for safely handling and shipping containers.

The scope for the remaining reviewed work control document (MWR W2202844, *Fabricate Intermodal Weather Cover*) was appropriately within the minor work screening criteria and was limited to shop fabrication that did not include elevated work or painting. Specifically, fall hazard prevention analysis (FHPA) 375 was appropriately completed to allow welding on top of the lid mounted on the intermodal container, but the FHPA was not listed on the MWR. Further, the MWR listed IWP 109972, *PMs, Lubes, Repairs, etc.*, for the hazard controls. The IWP appropriately required workers to contact the IH organization to evaluate any paints to be used. An interviewed IH staff member explained that the paint work was evaluated and opening a rollup door was verbally prescribed to control paint vapors. However, the IWP was not revised to document this control. Contrary to SOP 00-54, sec. 5.4 [1], a new MWR was not developed for elevated work and painting tasks performed under MWR W2202844 and additional hazard controls were not documented in a referenced industrial work permit (IWP). (See **Deficiency D-CHBWV-2.**) By not issuing an MWR with newly identified tasks and appropriately documenting and following hazard controls, adverse worker exposures resulted.

### **Identifying and Analyzing Hazards**

CHBWV generally identified and analyzed appropriate hazards in accordance with the WIP process, which requires an AHA. An AHA was appropriately prepared for WIP W1904751 and WIP W2201820, which represents complex or high-hazard work that is performed only once. Reviewed minor work packages, such as MWRs W2204112 and W2204495, were appropriately within the screening criteria, and the identified hazards were properly documented in the associated IWP.

Radiological hazards associated with MPPB demolition were effectively analyzed through the CHBWV as low as reasonably achievable (ALARA) review and radiological work permit development processes. ALARA review 2022-1001, *Demolition of MPPB*, was appropriately prepared in accordance with WVDP-163, *ALARA Program Manual*, and documented in form WVDP-163, *WVDP ALARA Review*. Radiological controls from this ALARA review were appropriately flowed into WIP W1904751. CHBWV also appropriately incorporated lessons learned from its prior demolition experience and from other demolition projects across the DOE complex in the development of WIP W1904751. This analysis included several CHBWV visits to the Hanford Site Plutonium Finishing Plant to gather and document lessons learned from issues that were encountered during that project, lessons learned during the WVDP Vitrification Facility demolition, and several other lessons learned across the DOE complex.

CHBWV radiological engineering personnel also developed a time lapse video showing selected Vitrification Facility work evolutions being performed during times when air monitors showed elevated radioactivity levels. The video footage showed clear linkage between the elevated radioactivity levels and associated triggering events, such as snow falling from a roof, high wind speeds, improper waste pile loading and inadequate use of dust suppression. Additional controls to prevent such transients from occurring during MPPB demolition were appropriately included in the WIP, and this video was used as part of the workforce training in preparation for the MPPB demolition work. Development of this training video was made possible due to CHBWV's implementation of the robust perimeter air monitoring and sampling networks discussed below and in Section 4.0.

IH practices associated with identifying various contaminants and physical hazards (asbestos, silica, nitrogen monoxide, nitrogen dioxide, noise, heat stress, etc.) for observed work were effectively implemented. IH monitoring plans for the collection of exposure data (personal and area) are robust, technically correct, and aligned with work activities. The employee exposure record retention process is adequate and compliant with DOE Order 243.1C, *Records Management Program*. Employees are appropriately notified of personal exposure and demolition area perimeter sample results in a timely manner, both through the supervisory chain and IH staff.

While CHBWV generally identified and analyzed industrial safety, radiological, and IH hazards, the following AHA implementation weaknesses were identified:

- Contrary to WV-921, secs. 7.2.1 A.2 and 7.2.3.A, CHBWV did not use the required hazard mitigation guide (HMG) or document the specific hazard controls in the AHA for WIP W1904751. (See **Deficiency D-CHBWV-3.**) Referencing other documents instead of listing the specific controls results in unclear controls and unnecessary worker safety risks. HMG requirements and observed practices included:
  - The WV-921 process requires all hazards associated with the work tasks and the specific hazard controls to be documented in the WV-3909 AHA form and the associated work documents. The WIP W1904751 AHA simply referred to section 2.0 of the WIP, various WIP appendices, the IWP, and the pre-job brief.
  - WV-921, att. A, *Hazard Mitigation Guide for Integrated Work Control Process*, provides a list of detailed mitigation controls addressing hazards, permits and forms, and driving procedures for each hazardous situation listed on the WV-3909 form. EA reviewed the HMG controls and identified many controls that were applicable to the work but were not included in section 2.0 of the WIP or in the IWP.
- The AHA for WIP W2201820 followed the HIM process and included an appropriate level of detailed controls for the hazards identified. However, contrary to WV-921, sec. 7.2.3.A, the AHA did not identify all of the hazards and related controls for the work to be performed. (See **Deficiency D-CHBWV-3.**) WIP W2201820 focused on hot work (welding) when performing preventive maintenance or attachment changes for heavy construction equipment in the demolition high contamination area and did not identify hazards relating to the work activities:
  - Work on rotating machinery or near unguarded operating equipment
  - Worker struck by moving equipment
  - Heavy equipment operation or transportation of heavy loads
  - High noise.

Inadequate hazard identification and analysis could result in worker exposure to uncontrolled hazards.

### **Developing and Implementing Hazard Controls**

Hazard controls were generally effectively developed and implemented for WIP activities and hazard-specific permits (pre-lift checklists, fall hazard prevention analysis, hot work permits, etc.). For example:

- Dust suppression requirements for radiological and IH hazards were well defined in WIP W1904751 work instructions and further delineated in appendix C. Dust suppression controls were effectively implemented for observed demolition work using turbine water misters (snow making equipment) mounted on remote-controlled mobile high-lift booms allowing precise water mist application. Water droplet size and volume was adjusted to fit the type of work and to compensate for environmental conditions such as wind, which can increase efficacy of dust control with significant reductions in water use. High-lift mister operators were properly positioned in the buffer zone outside the contamination area.
- One observed excavator end effector change, from a hammer to a shear, used a hammer attachment on a skid steer to push or drive out the pins securing the attachment to the excavator. This significantly reduced the potential hazards, physical effort, and time required to drive out pins with a sledgehammer and bar. A pre-lift checklist was appropriately used to move the end effector.

- Reviewed fall hazard prevention analysis and hot work permits appropriately established effective controls for the hazards.

MPPB demolition radiological and IH controls were rigorous, appropriately documented in the WIP W1904751 instructions and appendix C, and properly implemented during observed demolition work. The development and implementation of the unique dust suppression practices coupled with the following additional controls designed to detect and minimize the potential for environmental release of contaminants during demolition were collectively considered a **Best Practice**.

- A rigorous radiological survey and sampling protocol has been established in WIP W1904751 appendix C, including perimeter networks of 14 environmental continuous air monitors (ECAMs), 16 fixed retrospective air samplers, and 14 contamination control deposition plates used for deposition monitoring.
- The ECAM network provides an effective real-time readout of accumulated radioactivity on ECAM filters in a control room continuously staffed by radiological control personnel. Radioactivity levels are conveniently displayed on LCD screens that show current levels on each ECAM filter as a percentage of the ECAM alarm setpoints. Trends are displayed as graphs, and values approaching alarm setpoints can be communicated to operators who can suspend demolition or adjust the demolition rate and amount of dust suppression to minimize the potential for reaching an alarm setpoint.
- Both fixed air sampler filters and ECAM filters are adequately changed every shift, counted, and used as a basis for tracking the cumulative potential internal dose at radiological area boundaries, which is limited to 40 derived air concentration-hours per year (equivalent to the 100 millirem dose limit for non-radiological workers and members of the public).
- Deposition monitoring is appropriately required to be performed several times per shift during active demolition. Deposition plates, arranged in a perimeter network similar to the ECAMs and fixed air sampler network, provide a smooth surface for measuring whether any radiological contamination buildup on these surfaces may be occurring during demolition work.
- The demolition rate is effectively limited to no more than the amount of demolition debris on the ground than can be loaded into containers within the same day; once this limit is reached, additional demolition cannot proceed.

Although observed hazard controls were generally effective, fall protection hazards associated with repetitive radiological survey tasks at elevated heights were not identified in the MPPB AHA, and appropriate controls were not implemented. (See **Deficiency D-CHBWV-1**.) Not recognizing the use of a ladder without three points of contact as a unique task resulted in an unsafe working condition. EA observed RCTs were exposed to a fall hazard while using step ladders to survey the tops of intermodal containers. The RCTs were unable to maintain three points of contact due to technicians needing to carry and use radiological survey equipment during ladder use. This is a repetitive task with approximately 1,500 intermodal containers that will need to be surveyed during the demolition. The MPPB AHA generically identified elevated work with a need for ladders for the overall MPPB demolition work scope and referred to section 2 of WIP W1904751 for controls. However, the only requirement in the WIP section 2 for ladder use was to complete ladder inspection checklists. Neither the AHA nor the WIP identified radiological surveys of the tops of intermodal containers as a unique task that required a rolling safety ladder or stationary scaffold to perform this work safely.

Documentation for SOTW-approved routine work lacked sufficient detailed controls in some areas. WVDP-485, att. B, requires workers and safety personnel to refer to the applicable safety data sheets

(SDSs) for guidance, safety precautions, and PPE, and states that these controls shall be included on the IWP. Five reviewed IWPs did not list safety precautions or PPE for chemical use but simply referred to the SDS and IH for support if needed. (See **Deficiency D-CHBWV-1**)

### **Performing Work Within Controls**

CHBWV generally conducts work with defined controls. CHBWV planned work is appropriately authorized and released, pre-job briefs are effective tools, work is generally performed as written, and stop/pause work authority is well understood. CHBWV appropriately conducts plan of the week, plan of the day (POD), and daily work authorization list meetings to ensure effective work planning communication among the work force. Observed pre-entry briefings for work performed in the buffer area, contamination area, and high contamination/asbestos control area effectively covered the work to be performed that shift. CHBWV reviewed radiation levels, PPE requirements, and work pauses that occurred during previous shifts and some meetings included active participation of craft workers. Minimal electrical work was observed because there was limited electrical work on site during this review.

Pre-shift equipment inspections for forklifts and heavy equipment were properly conducted and documented. Observed intermodal handling was generally performed safely and within requirements. Observed inspections and surveys of intermodals were performed with the intermodal resting on an elevated structure, allowing inspection without exposing workers to a suspended load. Railcars were observed to be appropriately chocked to prevent movement, and derailleurs were installed to prevent runaway of railcars.

Stop/pause work authority is emphasized throughout the WP&C processes. Interviewed workers were aware that they had this authority, and multiple examples of pause work were observed, including the following:

- Work was appropriately paused when concrete was found in an excavation for the guard house gate controls. Evaluation of the slab found it was not connected to any source of power and oncoming shifts were appropriately notified of the paused work.
- EA observed CHBWV pause visual inspection of waste containers in the Waste Processing Area when an unexpected waste form was listed on the traveler documents (e.g., nitric acid and aqueous waste liquids).

While most observed work was performed in accordance with established controls, EA identified the following weaknesses:

- Contrary to WIP W1904751, app. G, item 13 and 29 CFR 1926.152(g)(10), a maintenance refueling team was observed filling a generator that was powering an air sampler with fuel while the generator was running. (See **Deficiency D-CHBWV-4.**) Refueling a running generator can result in a fire. The WIP and generator caution label noted the fire/explosion hazard.
- Contrary to procedure RC-RPO-104, *Performing Radiation and Contamination Surveys*, app. 14, and RC-IOC-17, *Calibration Procedure for the Air Sampler Rotometer*, CHBWV did not routinely verify flow rates for air samplers after shutting them down temporarily to remove the filters for required daily surveys and did not ensure required calibration stickers were present on all air samplers. When informed of this observation, CHBWV personnel placed the required calibration stickers (notating the next calibration due date) on the entire network of air samplers. (See **Deficiency D-CHBWV-5.**) Deviating from approved procedures for air sample collection could result in inaccuracies in estimates of potential exposures to airborne radiological hazards.

- A retrospective fixed air sampler was observed not running due to a generator outage, and the fixed air sampling systems at WVDP do not have gas totalizers. As such, the actual sample collection time prior to stoppage was unknown and the sample air volume could not be determined, which impacts the ability to accurately determine sampled air concentrations.
- Wipe samples collected from deposition plates, waste box surveys, and radiological buffer area release surveys were being comingled in the same envelope with clean wipes, resulting in the potential for cross contamination and/or loss of sample. (See **OFI-CHBWV-2**.) Variability in sample collection and handling methods could negatively impact the data quality of collected radiological samples. Subsequent to EA identifying this issue, CHBWV required RCTs to individually separate collected samples.

## **Work Planning and Control Implementation Conclusions**

CHBWV provides generally adequate work scope definition; radiological, industrial safety and hygiene hazard analysis and control development; and performance of work within controls. The development and implementation of unique dust suppression practices coupled with additional radiological and IH controls designed to detect and minimize the potential for environmental release of contaminants during demolition were collectively considered a best practice. However, contrary to requirements, a new MWR was not developed for some work being performed that presented additional hazards, and concerns with proper implementation of hazard analysis requirements and inadequate specification of controls in AHAs and/or IWP were evident. Concerns were also identified with not following certain WIP, caution label, and procedure requirements associated with generator refueling and radiological control.

### **3.3 Contractor Assurance System and Feedback and Improvement**

This portion of the assessment evaluated CHBWV's established CAS to plan and conduct risk-based assessments, analyze and manage WP&C related issues and associated corrective actions, review performance (including feedback and improvement), and share lessons learned.

#### **CAS Program**

CHBWV has established a generally effective CAS as required by DOE Contract DE-EM0001529, Modification 285, list B of attachment J-2. The CAS description is included in WVDP-310, which is reviewed annually by DOE-WVDP and CHBWV staff and submitted for DOE-WVDP Director approval. The DOE-WVDP Director approved the current ISMS Description on November 7, 2022. The CHBWV performance management, quality assurance, work control, and ES&H organizations provide appropriate processes, assessments, issue management tools, training, and periodic performance reports to support CAS implementation.

#### **Assessments**

CHBWV plans and conducts generally effective assessments. WV-121, *Integrated Assessment Program*, provides adequate guidance on processes, requirements, and responsibilities for conducting assessments. CHBWV uses input from issue reports, assessments, lessons learned, and planned work schedules to collect and appropriately consider risks during development of the Integrated Assessment Schedule (IAS). Lead auditors (assessors) are formally trained with annual proficiency reviews. Formal assessments listed in the IAS and the conduct of operations assessment schedule appropriately include independent assessments, management assessments, and required (regulatory) assessments. In calendar year 2022 (through September), CHBWV conducted 157 formal assessments, with 31 (20%) being WP&C related. Of those 31 WP&C-related assessments, 19 (61%) included field observations. In addition, 112

management workplace visits were conducted during the same timeframe. This collection of WP&C-related assessments demonstrates management attention to WP&C performance.

Reviewed assessments included one management assessment (management system review), two independent assessments, five self-assessments, and three third-party corporate reach-back assessments. The assessments reviewed were generally robust and self-critical, with corrective actions tracked in the Open Items Tracking System (OITS). However, CHBWV does not include a line of inquiry in its annual self-assessment of lessons learned and feedback to determine how well applicable lessons learned and worker feedback are captured and subsequently implemented in applicable work control documents. (See **OFI-CHBWV-3.**)

## **Issues Management**

CHBWV uses a systematic approach to event and issue analysis, development of corrective actions, and tracking of corrective action status, with some exceptions. *WVDP-357, WVDP Issues Reporting Program*, *EIP-102, Event Investigation Process*, and *WV-101, External and Internal Open Items*, provide adequate guidance on managing events, issues, extent-of-condition reviews, corrective actions, effectiveness reviews, and applicable lessons learned. OITS effectively supports tracking of issues and event causal analyses, corrective action tracking, extent-of-condition reviews, development of lessons learned, and effectiveness reviews. Causal analysts are formally trained and qualified. Three reviewed Occurrence Reporting and Processing System reports demonstrated adequate causal analyses and corrective action development. CHBWV has established an issues management review board (IMRB) consisting of senior managers to approve, monitor, and track significant corrective actions.

Although CHBWV has established a generally adequate issues management process, they did not use their issues management system to properly manage or resolve the four deficiencies identified in the 2018 EA Assessment, contrary to DOE Order 226.1B, *Implementation of DOE Oversight Policy*, DOE Order 414.1D, *Quality Assurance*, and *WV-101, External and Internal Open Items*. Two of these deficiencies related to the lack of required task based AHAs, and one related to not developing an MWR for work that was outside the bounds of SOTW, which are comparable to the new deficiencies identified in this report. (See **Deficiency-D-CHBWV-6.**) Not managing identified deficiencies in accordance with an established issues management process resulted in remaining uncorrected issues and worker safety vulnerabilities.

## **Performance and Feedback and Improvement**

CHBWV has generally effective processes and tools for performance review, sharing of lessons learned, and collection of worker feedback, with some exceptions. Periodic performance reviews and reports appropriately include weekly project reports, monthly metrics provided for IMRB meetings, metrics for the Executive Safety Review Board, monthly CAS reports, monthly senior manager project reports, and monthly safety and operational performance summaries. Work “step backs” and work interruptions are appropriately categorized and trended as a function of the five ISMS core functions. This data provides a means of identifying which stage(s) of the WP&C process may need additional management attention. However, CHBWV has not used available information (e.g., assessment results, event causes, local lessons learned, and worker feedback from work status logs, post-job reviews, and Beyond Target Zero teams) to develop, track, and trend a specific set of key leading and lagging performance metrics for WP&C preventing managers from making informed decisions and correcting negative performance/compliance trends before they become significant issues. (See **OFI-CHBWV-4.**)

*EIP-104, Operating Experience Program*, provides adequate guidance on collecting and distributing lessons learned. The Operating Experience Program Coordinator appropriately distributes DOE operating experience lessons learned, event lessons learned, and other lessons learned generated locally. Relevant

lessons learned are shared with the workforce through useful West Valley Lessons Learned reports, required reading assignments, safety assessment center calls, POD meetings, all-hands meetings, pre-job briefs, and daily crew briefings.

Worker feedback is identified and collected through work status logs, post-job reviews, and Beyond Target Zero teams. Although this feedback information is available for review, it is not formally analyzed, tracked and trended according to applicable ISMS core functions. Analysis of such worker feedback can serve as an essential element of an organization's continuous improvement in WP&C. (See **OFI-CHBWV-4.**)

### **Contractor Assurance System and Feedback and Improvement Conclusions**

CHBWV has established a generally effective CAS that provides appropriate processes, assessments, issue management tools, training, and periodic performance reports. Reviewed formal assessments were generally robust and self-critical. CHBWV uses a systematic and useful approach for event and issue analysis, development of corrective actions, and tracking of corrective action status. CHBWV has generally effective processes and tools for performance review, sharing of lessons learned, and collection of worker feedback. However, weaknesses were identified in the areas of managing deficiencies noted in the 2018 EA assessment: assessing implementation of lessons learned/worker feedback and developing a specific set of metrics for WP&C.

#### **3.4 DOE WVDP Field Office Oversight**

This portion of the assessment evaluated DOE-WVDP WP&C oversight of CHBWV, as well as specific DOE-WVDP programs, including issues management, employee concerns, and differing professional opinions (DPOs).

##### **Oversight of CHBWV**

DOE-WVDP effectively oversees CHBWV WP&C performance. DOE-WVDP has established generally adequate procedures that define the functions, responsibilities, authorities, and processes for conducting WP&C oversight. DOE-WVDP appropriately manages staffing levels to support WP&C oversight, which includes an annual Facility Representative (FR) staffing analysis. DOE-WVDP management recognizes that increasing operational activities has resulted in the need for one additional FR, which they are actively working to fill. North Wind Solutions, LLC (North Wind) is contracted to provide radiological technical support services and other business services to complement the DOE-WVDP Safety and Site Programs Team (SSPT). The two qualified FRs are experienced and adequately supported by DOE-WVDP safety and IH and North Wind radiological SMEs.

DOE-WVDP personnel performing WP&C oversight are appropriately qualified. DOE-WVDP procedure QP-364-01 *Implementation of Technical Qualification Program* [TQP] provides an adequate process to establish staff technical qualifications but does not require records to be entered into the electronic TQP (eTQP) and the continuous training program requirements. Employees use the individual development plan process to identify and track training, with most safety training acquired through CHBWV. However, QP-364-01 dated 6/03/2013 has not been updated to include the current DOE Order 426.1B, *Department of Energy Federal Technical Capabilities*, requirements for administering eTQP and continuous training. (See **OFI-DOE-WVDP-1.**) Also, contrary to DOE Order 426.1B, DOE-WVDP TQP participants' qualification and continuous training are not tracked or validated in the eTQP. (See **Deficiency D-DOE-WVDP-1.**) Not using eTQP to enter qualifications and continuous training makes it difficult to centrally track qualifications and continuous training and ensure personnel have the technical competencies through a standardized process.



DOE-WVDP personnel perform adequate WP&C oversight of CHBWV performance and inform management of results. DOE-WVDP FRs actively maintain operational awareness of contractor operations by attending CHBWV POD and group meetings. The FRs and SMEs summarize their recent oversight results during the morning DOE POD meetings held by the Deputy Manager, keeping the management and technical staff well informed of contractor operations, emerging issues, and issues resolved. FRs and oversight SMEs share updates on the progress of demolition activities, addressing first and second shifts during SSPT's end-of-the-day meeting. The FRs and technical staff were actively involved in the development of the MPPB demolition WIP, provided constructive reviews, and ensured that comments were adequately addressed by CHBWV. DOE-WVDP prepares and approves three-year assessment plans and is completing annual assessments as scheduled. In fiscal year 2022, 90% of the scheduled assessments were completed, which meets the completion goal.

### **Issues Management**

DOE-WVDP is generally effective in managing identified issues. DOE-WVDP tracks CHBWV issues in its correspondence tracking system database, and the assigned staff close out issues in a timely manner. Oversight personnel promptly communicate safety issues that require contractor action verbally and via emails. DOE-WVDP reviews CHBWV issues management reports, approves corrective action plans and verifies corrective actions. DOE-WVDP performs adequate annual ISMS effectiveness reviews, uses the results of reviews to create a written declaration of the status and effectiveness of ISM implementation within the field office and the contractor's organization, and submits this declaration to the DOE Office of Environmental Management. The *Fiscal Year 2021 ISMS Effectiveness Review Declaration* concisely summarizes performance-based insights from established, ongoing field element oversight processes and the quality assurance program. However, EA identified the following weaknesses:

- Contrary to DOE Order 227.1A, sec. 5.e.(3), DOE-WVDP did not ensure that CHBWV addressed the deficiencies noted in the 2018 EA Assessment. (See **Deficiency D-DOE-WVDP-2.**) Not ensuring that identified issues are appropriately managed can result in continued vulnerabilities.
- DOE-WVDP has no mechanism to capture data from oversight activities for analysis and trending or for scheduling targeted assessments and surveillances. (See **OFI-DOE-WVDP-2.**)

### **Employee Concerns**

DOE-WVDP procedure QP-442-02, *Employee Concern Program* [ECP] adequately describes the ECP in accordance with DOE Order 442.1B *Department of Energy Employee Concerns Program*. Five reviewed employee concerns from calendar year 2020 to 2022 were appropriately processed and closed, and the case file records are securely stored in locked file cabinets. The DOE-WVDP ECP is sufficiently publicized throughout the WVDP site using ECP posters containing the ECP Manager's contact information. The ECP Manager conducted a self-assessment of the DOE-WVDP ECP and an assessment of the CHBWV ECP in 2020, and the results were appropriately communicated to DOE-WVDP and CHBWV management. However, the DOE Headquarters ECP Director, Office of Environment, Health, Safety and Security (EHSS), conducted the biennial assessment of the DOE-WVDP ECP in September 2022, which identified several weaknesses and OFIs that were not identified in the DOE-WVDP ECP self-assessments. At the time of this assessment, DOE-WVDP had not yet initiated corrective actions for the identified weaknesses. (See **OFI-DOE-WVDP-3.**)

## **Differing Professional Opinions**

DOE-WVDP has not experienced a DPO case in the last 10 years. The procedure for managing DPOs is addressed in QP-442-02. However, QP-442-02 only directs the user to DOE Order 442.2, *Differing Professional Opinions*, for guidance and does not provide implementing instructions in sufficient detail to ensure site-specific consistent and reproducible processing of DPOs. (See **OFI-DOE-WVDP-4**.)

## **DOE-WVDP Oversight Conclusions**

Overall, DOE-WVDP has a generally effective, integrated process for Federal line oversight of WP&C. DOE-WVDP conducts adequate assessments, surveillances, and operational awareness activities and communicates issues from oversight activities to CHBWV. DOE-WVDP has identified the need for an additional FR and has taken action to fill the position. However, DOE-WVDP has not been administering eTQP to validate qualification and continuous training for TQP participants. Further, DOE-WVDP did not ensure that CHBWV appropriately addressed the deficiencies cited in the 2018 EA Assessment.

### **3.5 Follow-up of 2018 EA Findings**

CHBWV effectively resolved the finding cited in the 2018 EA Assessment (F-CHBWV-WPC-1) with respect to ensuring that all IH hazards are identified, analyzed, controlled, and effectively communicated to workers. CHBWV IH SMEs are now effectively integrated into the work control processes with appropriate exposure assessments, communications, and IH monitoring conducted to control identified hazards. The current procedures for the development of IWPs and MWRs incorporate the requirement for IH involvement when specific hazards are identified. Although work control processes have been reviewed during independent and third-party assessments, an independent assessment including a certified industrial hygienist (CIH) with construction experience has not been conducted. (See **OFI-CHBWV-5**.)

## **4.0 BEST PRACTICES**

Best practices are safety-related practices, techniques, processes, or program attributes observed during an assessment that may merit consideration by other DOE and contractor organizations for implementation. The following best practice was identified as part of this assessment:

CHBWV has developed and implemented unique and robust radiological and IH controls as well as dust suppression methods, daily limits on demolition rate and ground waste accumulation, continuous real-time ECAM monitoring in the control room, and fixed air sampling and deposition surveys to provide early detection of any contaminant migration beyond posted work area boundaries associated with the MPPB open-air demolition.

## **5.0 FINDINGS**

Findings are deficiencies that warrant a high level of attention from management. If left uncorrected, findings could adversely affect the DOE mission, the environment, the safety or health of workers and the public, or national security. DOE line management and/or contractor organizations must develop and implement corrective action plans for findings. Cognizant DOE managers must use site- and program-specific issues management processes and systems developed in accordance with DOE Order 226.1, *Implementation of Department of Energy Oversight Policy*, to manage the corrective actions and track them to completion.

## **CH2M HILL BWXT West Valley, LLC**

**Finding F-CHBWV-1:** CHBWV does not have a documented electrical safety program. (10 CFR 851.23(a)(14) 2018 Technical Amendment; NFPA 70E-2015, sec. 110.1(A); 10 CFR 851 appendix A. 10, *Electrical Safety*; and DOE Order 440.1B, attachment 1, section 9, *Electrical Safety*)

## **6.0 DEFICIENCIES**

Deficiencies are inadequacies in the implementation of an applicable requirement or standard. Deficiencies that did not meet the criteria for findings are listed below, with the expectation from DOE Order 227.1A for site managers to apply their local issues management processes for resolution.

### **CH2M HILL BWXT West Valley, LLC**

**Deficiency D-CHBWV-1:** CHBWV's AHA process does not ensure adequate task-specific hazard analysis or tailoring of needed controls to specific work activities resulting in some missed hazards and controls during observed demolition work. (48 CFR 970.5223-1, (b)(6); WVDP-310, sec. 11.0; and WV-921)

**Deficiency D-CHBWV-2:** CHBWV performed work tasks outside the scope of an approved MWR without issuing a new MWR to cover painting or elevated work and without documenting or following verbal controls. (SOP 00-54, sec. 5.4 [1])

**Deficiency D-CHBWV-3:** CHBWV did not document appropriate hazard controls on the AHA for WIP W1904751 and did not identify all hazards applicable to W2201820. (WV-921, sec.7.2.1 A.2. and 7.2.3.A)

**Deficiency D-CHBWV-4:** A CHBWV maintenance refueling team improperly refilled a generator with fuel while it was running and powering an air sampler. (WIP W1904751, app. G, item 13, and 29 CFR 1926.152(g)(10))

**Deficiency D-CHBWV-5:** CHBWV did not routinely verify flow rates for retrospective air samplers after shutting them down temporarily to remove the air filters for required daily surveys and did not ensure the proper placement of calibration stickers on all air sampler rotometers following calibration. (RC-RPO-104, app. 14, and RC-IOC-17)

**Deficiency D-CHBWV-6:** CHBWV did not use their issues management system to properly manage or resolve the four deficiencies identified in the 2018 EA Assessment. (DOE Order 226.1B, DOE Order 414.1D, and WV-101).

### **DOE-WVDP Field Office**

**Deficiency D-DOE-WVDP-1:** DOE-WVDP TQP participants' qualification and continuous training are not tracked or validated in the eTQP. (DOE Order 426.1B)

**Deficiency D-DOE-WVDP-2:** DOE-WVDP did not take appropriate action to ensure that CHBWV addressed the deficiencies cited in the 2018 EA assessment. (DOE Order 227.1A, sec. 5.e.(3))

## 7.0 OPPORTUNITIES FOR IMPROVEMENT

EA identified nine OFIs to assist cognizant managers in improving programs and operations. While OFIs may identify potential solutions to findings and deficiencies identified in assessment reports, they may also address other conditions observed during the assessment process. These OFIs are offered only as recommendations for line management consideration; they do not require formal resolution by management through a corrective action process and are not intended to be prescriptive or mandatory. Rather, they are suggestions that may assist site management in implementing best practices or provide potential solutions to issues identified during the assessment.

### CH2M HILL BWXT West Valley, LLC

**OFI-CHBWV-1:** Consider developing a relationship with a community college or university with a safety and IH or related program where students would have the opportunity for employment at the professional and technician level at CHBWV. The UCOR contractor on the Oak Ridge Reservation participates in a successful program with Pellissippi State Community College. The Indiana University of Pennsylvania also has safety and health degree programs that actively place interns with prospective employers, making it a good school to contact.

**OFI-CHBWV-2:** Consider the addition of a run-time meter and sample-handling practice revisions to minimize cross contamination and/or potential sample loss (see DOE-HDBK-1216-2015, *Environmental Radiological Effluent Monitoring and Environmental Surveillance*). Additionally, the Idaho National Laboratory may be a good resource for environmental monitoring procedures and sampling methods.

**OFI-CHBWV-3:** Consider including a line of inquiry in the annual assessment of lessons learned and feedback to determine how well applicable lessons learned and worker feedback are captured and subsequently implemented through changes to applicable work control documents. Similar assessments conducted by the lessons-learned coordinator at Four Rivers Nuclear Partnership, LLC at the Paducah Gaseous Diffusion Plant may provide useful examples.

**OFI-CHBWV-4:** Consider identifying a set of leading and lagging indicators for monitoring WP&C performance. Review of WP&C related metrics developed by Lawrence Livermore National Laboratory WP&C program management may be useful.

**OFI-CHBWV-5:** Consider including an independent CIH with construction experience on independent or external WP&C assessment teams to review IH hazard exposure assessment, monitoring, and work controls. Such a review would add credibility to the continued assessment of the adequacy of IH exposure assessment, hazard identification, workplace monitoring, and hazard controls.

### DOE WVDP Field Office

**OFI-DOE-WVDP-1:** Consider updating the QP-364-01 procedure periodically and when DOE incorporates new requirements in DOE Order 426.1B.

**OFI-DOE-WVDP-2:** Consider developing a mechanism to capture data from oversight activities for analyzing and trending data for repeat occurrences and safety issues and using the information for scheduling targeted assessments and surveillances to increase the effectiveness of oversight.

**OFI-DOE-WVDP-3:** Consider reviewing DOE Order 442.1B and DOE-WVDP procedure No. QP-442-02 implementation requirements and initiating corrective actions for identified weakness in the biennial assessment by EHSS.

**OFI-DOE-WVDP-4:** Consider updating the QP-442-02 procedure, or creating a separate procedure for DPO, to describe requirements, roles and responsibilities, and instructions on processing DPO concerns and implementing DPO program requirements. Typically, DOE sites maintain separate procedures for ECP and DPO.

## **Appendix A Supplemental Information**

### **Dates of Assessment**

Onsite Assessment: October 31 – November 3 and November 14-16, 2022

### **Office of Enterprise Assessments (EA) Management**

John E. Dupuy, Director, Office of Enterprise Assessments  
William F. West, Deputy Director, Office of Enterprise Assessments  
Kevin G. Kilp, Director, Office of Environment, Safety and Health Assessments  
David A. Young, Deputy Director, Office of Environment, Safety and Health Assessments  
Kevin M. Witt, Director, Office of Nuclear Safety and Environmental Assessments  
Kimberly G. Nelson, Director, Office of Worker Safety and Health Assessments  
Jack E. Winston, Director, Office of Emergency Management Assessments  
TBD, Director, Office of Nuclear Engineering and Safety Basis Assessments

### **Quality Review Board**

William F. West, Advisor  
Kevin G. Kilp, Chair  
Thomas C. Messer  
Christopher E. McFearin  
Michael A. Kilpatrick

### **EA Assessment Team**

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