



Independent Assessment of Training and Qualification Programs at Waste Isolation Pilot Plant

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Acronyms

BNA	Baseline Needs Assessment
CBFO	Carlsbad Field Office
CH	Contact Handled
CRD	Contractor Requirements Document
CY	Calendar Year
DOE	U.S. Department of Energy
DSA	Documented Safety Analysis
EA	Office of Enterprise Assessments
EMT	Emergency Medical Technician
EMT-B	EMT-Basic
EMT-I	EMT-Intermediate
EMT-P	EMT-Paramedic
FF-01	Firefighter Authorization Card
FF-02	Firefighter Inspection, Testing and Maintenance Authorization Card
HWFP	Hazardous Waste Facility Permit
IC	Incident Commander
JTA	Job Task Analysis
LCO	Limiting Condition of Operation
NFPA	National Fire Protection Association
NM	State of New Mexico
NCSE	Nuclear Criticality Safety Engineer
NSE	Nuclear Safety Engineer
NSM	Nuclear Safety Manager
NS-T1	USQ Determination Task Card
NS-T2	Safety Basis Development Task Card
NS-T3	Hazard Analysis Development Task Card
NS-T4	Accident Analysis Development Task Card
NS-T5	Control Selection and Functional Classification Task Card
NWP	Nuclear Waste Partnership, LLC
OFI	Opportunity for Improvement
SAT	Systematic Approach to Training
TIM	Training Implementation Matrix
TSR	Technical Safety Requirement
USQ	Unreviewed Safety Question
WFD	WIPP Fire Department
WHE	Waste Handling Engineer
WIPP	Waste Isolation Pilot Plant
WO	Waste Operations
WP	WIPP Procedure

INDEPENDENT ASSESSMENT OF TRAINING AND QUALIFICATION PROGRAMS AT WASTE ISOLATION PILOT PLANT

Executive Summary

The U.S. Department of Energy (DOE) Office of Enterprise Assessments (EA) conducted an independent assessment of the effectiveness of training and qualification programs established and maintained by Nuclear Waste Partnership, LLC (NWP), the management and operating contractor at the Waste Isolation Pilot Plant (WIPP), on February 14-17, 2022. The evaluation included the WIPP Fire Department (WFD), waste operations, and nuclear safety personnel. Additionally, this assessment evaluated oversight of NWP training and qualification programs by the Carlsbad Field Office.

EA identified the following strengths:

- Assessments of NWP's training and qualification programs by both NWP and the Carlsbad Field Office have enabled NWP to develop a good understanding of the program's strengths and weaknesses.
- The NWP Nuclear Safety organization has developed effective training and qualification programs for personnel who prepare unreviewed safety question evaluations.

EA also identified the following weaknesses:

- The Training Implementation Matrix is not included in the scope of the triennial training program assessments, and training program assessments are not performed at the required three-year frequency.
- The NWP Technical Training and Procedures Department Training Lead is approving training documents without the required management qualifications.
- NWP has not adequately addressed training program issues related to collection and use of post-training feedback and biennial review of training materials. Weaknesses in these areas have been repeatedly identified.
- NWP has not performed a job task analysis for the Firefighter I authorization card to ensure that all job tasks and training needs are identified.
- The WFD is not meeting the qualification requirements for WIPP Level I instructors.
- The NWP Qualified Watch List process does not ensure that at least one WFD emergency medical technician (EMT) on shift is an EMT-Intermediate or EMT-Paramedic.
- NWP qualification of waste handling engineers does not include supervisory elements or skills for supervising TRUPACT III handling.
- Continuing training and requalification for nuclear safety engineers was not completed within the required two-year cycle.

In summary, NWP has established a generally effective program that addresses most required elements of training and qualification programs for the personnel categories reviewed during this assessment. However, a number of important weaknesses have been identified by both NWP and DOE oversight. Personnel observed and interviewed during this assessment were knowledgeable and competent in performing their assigned duties. With its current knowledge and understanding of the weaknesses in the training and qualification programs, NWP is well positioned to make substantial improvements in these programs.

INDEPENDENT ASSESSMENT OF TRAINING AND QUALIFICATION PROGRAMS AT WASTE ISOLATION PILOT PLANT

1.0 INTRODUCTION

The U.S. Department of Energy (DOE) Office of Nuclear Safety and Environmental Assessments, within the independent Office of Enterprise Assessments (EA), assessed the effectiveness of the training and qualification programs at the Waste Isolation Pilot Plant (WIPP). This assessment was requested by the Carlsbad Field Office (CBFO). Assessment planning and document collection began in January 2022, with onsite activities conducted on February 14-17, 2022.

Nuclear Waste Partnership, LLC (NWP) manages and operates WIPP for CBFO. Consistent with the *Plan for the Independent Assessment of Training and Qualification Program at the Waste Isolation Pilot Plant, February 2022*, this assessment evaluated the effectiveness of NWP's programs in managing and maintaining contractor training and qualification performance. The evaluation included the fire department, waste operations, and nuclear safety personnel, referred to as "in-scope personnel." EA also reviewed CBFO oversight of the NWP training and qualification programs.

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, findings, deficiencies, and opportunities for improvement (OFIs)" as defined in the order.

As identified in the assessment plan, criteria to guide this assessment were based on selected performance objectives in DOE-STD-1070-94, *Criteria for Evaluation of Nuclear Facility Training Programs*, which is invoked by DOE Order 426.2, *Personnel Selection, Training, Qualification, and Certification Requirements for DOE Nuclear Facilities*. In addition, the implementation of fire protection personnel training requirements from DOE Order 420.1C, *Facility Safety*, was assessed. EA also used elements of EA Criteria and Review Approach Document 30-07, Rev. 0, *Federal Line Management Oversight Processes*, to collect and analyze data on CBFO oversight activities. EA examined key documents, including training plans, procedures, job task analyses (JTAs), lesson plans, past assessments, and training and qualification records. EA also observed training activities and interviewed key personnel responsible for developing and executing the associated programs. The members of the assessment team, the Quality Review Board, and management responsible for this assessment are listed in appendix A.

There were no previous EA findings for follow-up addressed during this assessment.

3.0 RESULTS

3.1 Training Program Administration

This portion of the assessment evaluated the effectiveness of the NWP training and qualification programs for in-scope personnel in accordance with the requirements of DOE Orders 426.2 and 420.1C, addressing a training implementation matrix (TIM); the training program plan; the training organization;

training facilities, equipment, and materials; training program assessments; corrective actions; and the training records management program.

Training Implementation Matrix

The CBFO-approved TIM, *WIPP Training Implementation Matrix*, addresses DOE Order 426.2 training and qualification requirements, including those that apply to in-scope personnel. The NWP TIM is adequately implemented through WIPP procedure (WP) 14-TR.01, *WIPP Training Program*, subordinate tailored training program plans, and a suite of implementing procedures for in-scope personnel. The TIM also appropriately addresses supervisors (e.g., waste handling engineers, or WHEs), who are subject to training that meets the requirements of DOE Order 426.2, attachment 1, *Contractor Requirements Document* (CRD), chapter I, section 4.b.(5)(a). WP 14-TR.01 requires a triennial training program assessment but does not address the requirement to include the TIM in the assessment scope, contrary to DOE Order 426.2, attachment 1, CRD, chapter I, 4.a.(3). (See **Deficiency D-NWP-1.**) Without a requirement to evaluate TIM elements, training program assessments may not adequately identify and remediate program deficiencies.

Furthermore, contrary to appendix 1, table 1 of the TIM, the NWP Technical Training and Procedures Department Training Lead is performing a management function without the required qualification. (See **Deficiency D-NWP-2.**) The TIM specifies that deputy managers shall be trained and qualified to the same level as managers, and although the NWP Technical Training and Procedures Department does not have a formal deputy manager position, it relies instead on the Training Lead. Reviewed documents showed that the Training Lead formally approves training exceptions and extensions. Reliance on the Training Lead for this management function without the required qualification could degrade the quality of the training program.

Training Program Plan

WP 14-TR.01 adequately addresses DOE Order 426.2. WP 14-TR.01 and subordinate implementing procedures (e.g., WP 14-TR3008, *Analysis and Design*; WP 14-TR3309, *Training Evaluation*) define appropriate processes for the analysis, design, development, implementation, and evaluation of the training program. Implementation of WP 14-TR.01 satisfies the commitment in chapter 12 of the WIPP documented safety analysis (DSA) and technical safety requirement (TSR) 5.6.1, key element 12.3, *Training, Qualification and Continuing Training Program*, by establishing the roles, responsibilities, authorities, accountabilities, and processes for training personnel commensurate with their job assignments and duties. Tailored training program plans for in-scope personnel are appropriately developed and implemented in accordance with WP 14-TR.01.

Training Organization

NWP has established and maintains an adequate training organization to implement WP 14-TR.01 and subordinate training program plans for in-scope personnel. NWP line management ensures that sufficient resources are available to implement the training program, and four interviewed training personnel demonstrated appropriate knowledge of the program. WP 14-TR.01 adequately defines the responsibilities, qualifications, and authority of the training organization.

Training Facilities, Equipment, and Materials

NWP provides adequate onsite training facilities, equipment, and materials, and appropriately arranges for offsite training, to support safe and consistent training for in-scope personnel. The onsite community classroom space within the Technical Training Building is sufficient to support classroom training.

Interviews with WIPP Fire Department (WFD) command staff affirmed that the offsite Permian Basin Regional Training Center provides an effective training facility for completing annual live fire burn training evolutions.

Training Program Assessments

Since 2014, NWP has performed several assessments to identify training program weaknesses:

- In June 2014, an independent subcontractor team assessed the NWP training and qualification programs, utilizing DOE-STD-1070-94, that provided a baseline for program improvement. The independent team concluded in its report that 56% of the objectives and criteria from the DOE standard were met. The report identified 31 findings and 11 observations, including NWP's previous non-compliance with the DOE Order 426.2 triennial assessment requirement. These results guided training program development work for the next several years.
- In June 2015, NWP conducted another independent assessment, using a different subcontractor with limited criteria, to follow up on the 2014 assessment and the progress in implementing the associated corrective actions. The 2015 assessment identified 12 new findings and 14 new OFIs, but the associated assessment report states that the assessment was not designated as a DOE-STD-1070-94 triennial assessment.
- In January 2019, NWP performed a DOE-STD-1070-94 triennial assessment, covering all eight objectives and supporting criteria of the DOE standard. The 2019 assessment identified nine findings and seven OFIs, including some repeat findings, and determined that nine criteria had not been met. This assessment was performed almost five years after the last full triennial assessment, which was in June 2014. Therefore, contrary to DOE Order 426.2, attachment 1, CRD, chapter I, 4.a.(3), NWP did not meet the three-year frequency requirement. (See **Deficiency D-NWP-3.**) Not conducting training program assessments at the required frequency may lead to missed opportunities to identify weaknesses.

The NWP Performance Assurance organization assessment planning document for 2022 correctly identified the requirement to perform the next full training and qualification assessment in January 2022 to meet the DOE Order 426.2 triennial assessment requirement, but the assessment had not been scheduled or conducted at the time of the current EA assessment. The interviewed training manager incorrectly intended to take credit for an assessment conducted by CBFO in 2021 instead of conducting the required triennial assessment.

NWP performs annual training program health assessments to verify the adequacy and effectiveness of DSA commitments for 11 safety management programs. WP 15-CA1014, *Safety Management Program Health Assessment*, defines the process for performing and documenting program health assessments, which are presented to NWP management in an annual briefing. The reviewed briefing material for the 2019 and 2021 presentations appropriately included training and qualification information and discussed DSA key elements 12-2 (emergency response) and 12-3 (training and qualification programs). These assessments inform senior management of the program manager's evaluation of program status, issues, needs, and path forward.

Corrective Actions

NWP's management of identified issues in the training program is not fully effective. NWP records and tracks training program issues identified in assessment reports using its iCAS issues management system. NWP has closed most training program and implementation issues identified since 2014. However, three reviewed assessment reports (2014, 2019, 2021) and current training documentation demonstrate that the

following two issues, which were identified in three sequential assessment reports, have not been adequately addressed:

- NWP does not collect and use post-training feedback from the instructed workers and their supervisors. The recent implementation of worker feedback requests has partially addressed this issue, but no feedback has been solicited from any supervisors of instructed workers.
- NWP does not review training materials biennially.

This past performance demonstrates that contrary to DOE Order 226.1B, *Implementation of Department of Energy Oversight Policy*, attachment 1, CRD, section 2.b.(3)(b), NWP is not fully effective in correcting training program issues. (See **Deficiency D-NWP-4.**) Incomplete actions to correct and prevent recurrence of issues related to training have inhibited the improvement of training development and delivery.

Training Records Management Program

NWP implements a generally effective training records management program. Per WP 14-TR.01, the training records management program is part of the overall WIPP records management program, and appropriately collects and retains management-required data on each individual's training participation, performance, qualification, and certification within the Learning Management System. In addition, training program records are accessible to verify personnel qualification status and the accuracy of training program content.

Training Program Administration Conclusions

NWP has implemented a generally effective training program for in-scope personnel. However, weaknesses were identified associated with the scope and frequency of triennial training program assessments, the qualification of the Technical Training and Procedures Department Training Lead, and the incomplete corrective actions for previously identified issues.

3.2. Fire Department Personnel Training and Qualification

This portion of the assessment evaluated the implementation of the NWP training and qualification programs for WFD personnel to meet WIPP emergency response requirements through personnel qualification, certification, and continuing training and requalification.

Personnel Qualification

NWP has established a cadre of qualified WFD personnel to meet WIPP firefighter/emergency medical technician (EMT) and incident command requirements through personnel selection, initial training, and initial qualification.

NWP selects individuals for employment in the WFD who satisfy defined selection criteria consistent with the approved DSA, TIM, baseline needs assessment (BNA), emergency management plan (DOE/WIPP 17-3573), the hazardous waste facility permit (HWFP), State of New Mexico (NM) requirements, and applicable DOE requirements. Candidate selection criteria for WFD firefighter personnel are defined in WP 12-FP.03, *WIPP Fire Protection Program Plan*; WP 12-FP.04, *WIPP Fire Department Training Plan*; and WP 12-FP.12, *WIPP Fire Department Position Descriptions and Emergency Medical Services Requirements*. These documents appropriately address the minimum requirements for background, education, certification, experience, physical fitness, and medical

examination. Training and qualification records were reviewed for 14 of 27 WFD personnel, all of which were compliant with WP 12-FP.03 and WP 12-FP.04.

NWP ensures that firefighter/EMTs receive appropriate initial training and facility-specific emergency response training documented in WP 12-FP.04, section 4.1.1, authorization card FF-01, *Firefighter*. Newly hired firefighter/EMTs are required to possess National Fire Protection Association (NFPA) 1001, *Standard for Fire Fighter Professional Qualifications*; Firefighter I and II certification from the NM Fire Training Academy (or equivalent); and a valid EMT-Basic (EMT-B) License (or higher) as an appropriate baseline level of training. New firefighter/EMTs are further subject to required facility-specific training delineated in WP 12-FP.04, which is consistent with the expectations and limitations associated with WFD response capabilities and responsibilities identified in the BNA, DSA, HWFP, and NFPA 600, *Standard on Facility Fire Brigades*.

Authorization card FF-01 and subordinate task cards contain an appropriate balance of instruction and demonstration requirements to affirm initial competency. NWP has appropriately self-identified that it did not use the systematic approach to training (SAT) in accordance with DOE Order 426.2 to ensure that all authorization card FF-01 tasks were incorporated into the WFD training program. NWP appropriately entered this weakness in the overall training program into its issues management system as part of corrective action WIPP-ACT-21-2412-31. However, contrary to DOE Order 426.2, attachment 1, CRD, chapter I, 4.a and WP 14-TR3008, *Analysis and Design*, section 5.2, NWP inappropriately justified not performing a JTA (a key element of the SAT) for authorization card FF-01 by relying solely on NFPA and NM EMT certifications. (See **Deficiency D-NWP-5**.) Reliance on NFPA and NM EMT certifications does miss critical site-specific training requirements and valuable training opportunities.

WP 12-FP.04 generally specifies adequate required training for firefighter/EMTs who are assigned surveillance and testing responsibilities (TIM Fire Fighter I position using authorization card FF-02, *Firefighter Inspection, Testing and Maintenance*). Based on interviews, firefighter/EMTs are also assigned as fire watches as a compensatory measure in response to fire protection system impairments (i.e., a fire protection system unable to perform its design function). However, several issues were identified:

- Authorization card FF-02 is not yet approved or issued for implementation, and no WFD personnel have been qualified under FF-02.
- WP 12-FP.04 does not address training on surveillance and testing of portable fire extinguishers, emergency lighting and exit signage, or combustible loading and compressed gas cylinder inspections.
- Neither WP 12-FP.03 nor WP 12-FP.04 addresses responsibilities for firefighter/EMTs performing fire protection system impairment fire watch duties or the TSR-defined roles for fire watch and roving fire watch.

To address this situation, NWP is developing additional training courses and task cards to support qualification of personnel performing surveillance, testing, and fire watch roles under authorization card FF-02 as part of the overall WFD training program implementation plan for calendar year (CY) 2022 (part of corrective action WIPP-ACT-21-2412-28).

WFD incident commanders (ICs) receive initial training as described in WP 12-FP.04, authorization card IC-01, *Firefighter Incident Commander*, which appropriately requires completion of authorization card FF-01, along with national and WIPP emergency response organization incident command system training. However, authorization card IC-01 does not yet include training recently developed by the NWP Emergency Management/Preparedness organization for WIPP ICs and incident command post operations

(i.e., WIPP training courses EM-108, *Incident Commander (IC) Roles and Responsibilities Specific to WIPP Operational Emergencies*, and EM-109, *Establishing and Maintaining a Functional Command Post*).

Initial qualification of WFD personnel is generally documented appropriately and approved through completion of WP 12-FP.04 authorization cards and on-the-job instructor training. The qualified watch list for the crew that was on duty on February 3, 2022, demonstrated adequate tracking of qualification status for WFD Firefighter I (FF-01) and IC (IC-01) positions. One position, WFD crew Lieutenant, is appropriately required to obtain and maintain WIPP Level I Instructor qualification in accordance with WP 14-TR3308, *On-the-Job Training*, because this position is responsible for delivering crew and company level training to on-shift personnel. However, contrary to the qualification requirements of WP 14-TR3308, section 5.1.1 and WP 12-FP.04, the record shows that one WFD on-shift crew Lieutenant had not yet completed his WIPP Level I Instructor qualification. (See **Deficiency D-NWP-6.**) Lack of WIPP Level I Instructor qualification may lead to degraded training delivery and may invalidate completion of on-the-job WFD crew and company level training.

Certification

Even though the approved TIM does not identify any NWP positions that require certification as described in DOE Order 426.2, NWP appropriately requires NM and other nationally recognized certifications for WFD firefighter/EMTs consistent with DOE-STD-1066-2012, *Fire Protection*. WP 12-FP.04 appropriately requires firefighter/EMTs to have current EMT-B licensure (certification) or higher as a condition of employment. Fourteen sampled EMT certification records demonstrated that those WFD personnel all have at least EMT-B certification. Additionally, the BNA and DOE/WIPP 17-3573 require a subset of on-shift firefighter/EMTs to have a higher level of certification, namely EMT-Intermediate (EMT-I) and/or EMT-Paramedic (EMT-P) licensure. However, contrary to these requirements, NWP's use of the qualified watch list to verify on-shift personnel qualification only ensures that firefighter/EMTs possess a current authorization card FF-01 (EMT-B certification only). (See **Deficiency D-NWP-7.**) The inability to formally verify on-shift minimum EMT staffing/qualification may limit the capability of onsite emergency medical service response.

Continuing Training and Requalification

NWP ensures that WFD personnel maintain and enhance capabilities through continuing education and training, drills and exercises, and requalification to meet DSA, HWFP, BNA, NM, and facility-specific requirements. The continuing education/training program documented in WP 12-FP.04, and its implementation in the CY 2022 WFD training matrix is sufficient to maintain the required WFD personnel qualifications and certifications. The CY 2022 WFD training matrix also delineates a comprehensive training schedule for completing the first annual cycle of WP 12-FP.04 continuing training courses. Additionally, EMT continuing training is provided as required by the NM Emergency Medical Systems Bureau, the applicable regulatory authority.

NWP generally performs adequate drills and exercises for continuing training to ensure that WFD personnel can effectively perform assigned responsibilities, as required by DOE Order 151.1D, *Comprehensive Emergency Management System*, DOE Order 420.1C, the DSA, and the HWFP. WP 12-ER.13, *WIPP Drills and Exercises*, defines an adequate drill and exercise program for the emergency response organization and WFD. WP 12-FP1001, *Initial Fire Attack Training Evolutions*, is used as part of the monthly WFD drill and exercise program to appropriately develop and demonstrate competencies for emergency scene operations in accordance with NFPA 1410, *Standard on Training for Emergency Scene Operations*. According to interviews with WFD command staff, WP 12-FP1001 training evolutions involving the operation of fire hydrants and discharging water have been frequently limited to

dry hose lays and operational simulations that limit training effectiveness. This approach results from TSR limiting condition of operation (LCO) 3.1.1 Condition D, which restricts the fire hydrant flow time during testing to no more than four hours, precluding the conduct of full training evolutions. The NWP nuclear safety organization stated that they were working on changing LCO 3.1.1, Condition D to extend the time allowed for this activity.

NWP generally requalifies WFD instructors on an identified schedule or upon return to work after an extended absence. Training records were current for all three WFD WIPP Level II and Emergency Services Levels I and II instructors. However, contrary to the requalification requirements of WP 14-TR3308, section 5.1.2, one WFD crew Lieutenant's and the Fire Chief's WIPP Level I Instructor qualifications had lapsed. (See **Deficiency D-NWP-6.**) Lapses in WFD instructor qualifications may result in the inability to complete WFD crew-/company-level training.

Fire Department Personnel Training and Qualification Conclusions

NWP appropriately establishes a cadre of trained and qualified WFD personnel to meet WIPP emergency response requirements. Newly hired WIPP firefighter/EMT and IC personnel are appropriately selected based on minimum requirements (including licenses and nationally recognized certifications) and qualified through initial training, which is documented on initial qualification records. NWP adequately ensures that WFD personnel maintain and enhance capabilities through continuing education/training, drills and exercises, and requalification. However, weaknesses were identified in the areas of JTA performance, verifications of shift participants, and incomplete/lapsed qualifications.

3.3. Waste Operations Personnel Training and Qualification

This portion of the assessment evaluated the implementation of selected elements of DOE Order 426.2 for NWP's Waste Operations (WO) organization, including WO training, contact handled (CH) WHE qualification, and continuing training and requalification.

Waste Operations Training

The WO organization has generally implemented adequate training and qualification processes and practices for CH waste operations personnel. Starting after the 2014 shutdown in response to the underground fire, NWP revised the training program to incorporate a SAT process as part of recovery efforts. The training program is acceptably implemented by WP 05-WH.04, *WIPP Waste Handling Operations Training Program Plan*. The training program for CH personnel appropriately includes required classroom training for such subjects as hazardous waste and radiological controls. This training program predominantly uses on-the-job training with a Level I Instructor's evaluation of the workers' knowledge of job tasks and practical demonstrations of proficiency.

NWP effectively implemented the SAT process with a 2016 JTA addressing 35 tasks in accordance with the *Contact Handling Waste Operations Training Program Plan*, which applies to three job positions. NWP demonstrated continued efforts to apply the SAT process in December 2017 by revising the JTA and adding a new qualification for CH waste technicians handling TRUPACT III waste packages, addressing 10 additional tasks. Two of the 10 TRUPACT III task cards were later eliminated at the request of line management. However, the training organization did not correspondingly revise the JTA in accordance with the SAT process. CBFO has identified the longstanding issue of inadequate SAT process implementation as a more widespread NWP problem (WIPP issue WF18-224 and WIPP-ISSUE-21-1567; note that the issues management numbering system has changed).

WO organization managers have actively maintained task cards for the organization. Managers routinely

respond to training department requests for review of the task cards and modify them to reflect current operations. The reviewed individual qualification records for three qualified positions (emplacement technician, waste handling technician, and WHE) demonstrate that incumbents meet entry-level requirements and have taken required training.

CH Waste Handling Engineer Qualification

NWP generally ensures that WHEs have the appropriate education, experience, and initial training to perform their job. NWP's Human Resources department confirms that employees meet entry-level requirements for the WHE position, which are recorded on the WHE qualification card. New WHEs must initially complete the basic waste handling qualifications of the individuals they supervise: CH Waste Handling Backfill, Floor, Yard and Emplacement Technician (A Card), and CH Waste Handling Technician (B Card). Once achieved, the WHE also completes a WHE qualification card. The training for these qualifications consists of required reading, classroom training (for such subjects as hazardous waste worker, lockout/tagout, and radiation protection), and on-the-job training and evaluation by a Level I training instructor that is recorded on "task cards." However, contrary to DOE Order 426.2, attachment 1, CRD, chapter I, 4.b(5)(a), the WHE qualification card does not include general supervisory training or JTA-derived tasks for supervision of TRUPACT III handling. (See **Deficiency D-NWP-8.**) Failure to address the full scope of job duties on the WHE qualification card could impact the safe performance of job duties. Further, in 2020, WO management, with approval by the training manager, reduced the number of task cards from 11 to 5 by cancelling or merging task cards; NWP could find no record of the basis or logic for this realignment. This action was taken without updating the 2017 JTA and could have missed certain important tasks. For example, the practical application (i.e., on-the-job training) of conduct of operations or radiological controls to waste handling are no longer addressed.

Continuing Training and Requalification

NWP generally provides effective continuing training and requalification for CH personnel. The *WIPP Waste Handling Operations Training Program Plan* adequately describes continuing education/training program requirements. The knowledge and skills of qualified individuals are comprehensively verified every 24 months through requalification. However, the plan does not address a process or practice for recording continuing training, such as on-the-job training and the training associated with facility system/component changes, applicable procedure changes, and applicable operating experience from similar facilities. (See **OFI-NWP-1.**)

Waste Operations Training and Qualification Conclusions

NWP training and qualification for WO personnel are generally adequate to ensure that the workers are competent to perform assigned tasks correctly. However, the SAT process is inconsistently implemented, and the WHE qualification does not address supervisory elements or skills for supervising TRUPACT III handling.

3.4. Nuclear Safety Personnel Training and Qualification

This portion of the assessment evaluated the implementation of selected elements of DOE Order 426.2 for nuclear safety personnel, including nuclear safety engineer (NSE) and nuclear criticality safety engineer (NCSE) initial and continuing training and qualification/requalification.

Personnel Qualification

The NWP TIM appropriately identifies two nuclear safety positions (NSE and NCSE) to which DOE Order 426.2 requirements apply. WP 12-NS.09, *WIPP Nuclear Safety Training Program Plan*, adequately establishes the education and experience, initial training, and initial qualification requirements for the NSE and NCSE positions.

EA reviewed the Nuclear Safety JTA and determined that it did not include a list of tasks performed by the NSE and NCSE or an analysis of the task-to-training requirements, even though WP 12-NS.09 stated that it did. The Nuclear Safety JTA does not provide the basis for NSE training and qualification requirements, is not being used by NWP management, and is not reviewed biennially as required by WP 12-NS.09. This issue with JTAs was identified during a recent CBFO assessment and is included in the NWP corrective action system (WIPP-ISSUE-21-1567).

Qualification card NSE-01, *Nuclear Safety Engineer*, is limited in scope and is not intended to qualify personnel to develop or review safety basis documents and supporting analyses. WP 12-NS.09 identifies five task cards that must be completed for an NSE to be qualified to perform “specialized activities” – i.e., unreviewed safety question (USQ) determination (NS-T1), safety basis development (NS-T2), hazard analysis development (NS-T3), accident analysis development (NS-T4), and control selection and functional classification (NS-T5). Only NS-T1 has been developed and is in use. NS-T2, NS-T3, NS-T4, and NS-T5 have not been developed. Because NWP exclusively uses subcontractors to develop safety basis documents (other than USQ evaluations), the lack of task cards and NWP personnel meeting those qualifications has not hindered NWP’s nuclear safety program. The reviewed qualification records for NSE-01 qualified personnel appropriately document their initial training and qualification.

The USQ determination task card, NS-T1, is thorough and adequate to ensure that personnel who complete it have the requisite competencies. The four NSEs currently in the Nuclear Safety organization are all qualified to NS-T1. Based on interviews, the four NS-T1 qualified NSEs are knowledgeable of the WIPP safety basis documents and the NWP USQ process. The qualification records for the NS-T1 qualified personnel were found to appropriately document their initial training and qualification.

Qualification card NCSE-01, *Nuclear Criticality Safety Engineer*, is also thorough and adequate to ensure that personnel who complete it have the requisite competencies. One NSE is working on completing the NCSE-01 qualification card, but none of the NWP NSEs currently in the Nuclear Safety organization are qualified to NCSE-01. Subcontractor support is currently used to perform NCSE functions.

WP-14-TR.01 requires subcontractor personnel to “meet the qualification requirements for the job function to be performed.” Training and qualification equivalencies are documented for the two primary subcontractor personnel used by the NWP nuclear safety organization (one for safety basis work and one for nuclear criticality safety work). However, NWP has not yet developed the applicable task cards (NS-T2, NS-T3, NS-T4, and NS-T5) for the subcontractor who develops and maintains the DSA and TSR; equivalencies have not been granted for these tasks. The subcontractor doing the safety basis development and maintenance work is competent to do the work based on training and years of experience, but justification for an equivalency to a qualification card that does not exist raises questions about the thoroughness of the NWP training equivalency process. (See **OFI-NWP-2**.)

Continuing Training and Requalification

WP 14-TR.01, section 5.1.2 requires a continuing training program to be established for technical support personnel, including NSEs and NCSEs, and administered on a cycle not to exceed two years. WP 12-NS.09, section 5.2.1 describes what an effective continuing training program should encompass but

requires only minimal continuing training for the NSE and USQ determination (NS-T1) qualified positions. Continuing training for NCSEs is not explicitly addressed in WP 12-NS.09.

For NSE continuing training, WP 12-NS.09 requires “satisfactory performance of assigned duties, and completion of training assigned by the NSM [Nuclear Safety Manager].” The “satisfactory performance of assigned duties” portion of the requirement is not commonly considered to be continuing training per se, but rather an indicator of the person’s readiness to be requalified. The second portion of the requirement can be adequate if the “training assigned by the NSM” actually implements the requirements for continuing training in DOE Order 426.2 and the description of continuing training included in WP 12-NS.09, section 5.2.1. In October 2020, the NSM documented the basis for requalification of the NSEs qualified at the time. The requalification documentation summarized the specific training completed (i.e., continuing training) by each of the NSEs and included sufficient content to generally comply with DOE Order 426.2. However, EA noted that the continuing training and requalification documented in October 2020 was not timely. DOE Order 426.2 requires the continuing training program to be conducted “on a cycle not to exceed two years” and requalification to be documented “within the two-year continuing training cycle.” Contrary to DOE Order 426.2, attachment 1, CRD, chapter I, 7.a(1) and 8, both the continuing training cycle and the requalification of the NSEs exceeded the two-year periodicity. (See **Deficiency D-NWP-9**.) Delayed completion of continuing training and requalification could result in knowledge gaps and reduced quality of nuclear safety documentation. WP 12-NS.09, section 5.2.1 does not explicitly capture the DOE Order 426.2 requirement that the continuing training program be “administered on a cycle not to exceed two years,” but instead states that continuing training “is administered on a periodicity established by line management.” (See **OFI-NWP-3**.)

The required two-year cycle for NSE continuing training and requalification ends in October 2022. No documentation for completed continuing training since October 2020 was available, though two of the interviewed NSEs mentioned that they had completed safety basis related computer-based training courses. The NSE continuing training program currently uses an ad hoc process rather than a systematic approach. (See **OFI-NWP-4**.)

Nuclear Safety Personnel Training and Qualification Conclusions

NWP has established sufficient nuclear safety training and qualification programs that focus primarily on providing qualified USQ evaluation preparers and meet NWP’s limited needs, given its use of subcontracted technical experts in the areas of nuclear safety and nuclear criticality safety. However, the continuing training cycle and requalification for NSEs are not being completed within the required two-year period.

3.5. Federal Oversight

This portion of the assessment evaluated CBFO’s establishment and implementation of effective oversight processes related to the NWP training and qualification programs at WIPP. The CBFO oversight program implements DOE Policy 226.1B, *Department of Energy Oversight Policy*, through DOE/CBFO-04-3299, *Carlsbad Field Office Contractor Oversight Plan*.

CBFO does not currently have a full-time designated resource as the nuclear facility training subject matter expert, responsible for general oversight of NWP training and qualification programs. However, oversight of training and qualification is conducted through routine operational awareness activities and incorporated in functional area assessments. For example, a recent maintenance program assessment included a review of the effectiveness of the training and qualification of maintenance personnel.

In accordance with DOE Order 426.2, section 4(b), CBFO has reviewed and approved the most recent revisions of NWP's TIM and WP 14-TR3312, *Exceptions/Equivalencies and Extensions*. CBFO management procedure MP 4.2, *Document Review and Approval* provides an effective process for conducting reviews of contractor documents, including the use of a Document Review Record to track the resolution of comments.

CBFO conducted a DOE-STD-1070-94 assessment from March to September 2021 using a team of eight well-qualified individuals who thoroughly evaluated the criteria. That assessment concluded that while the training program for WIPP was effective overall, numerous programmatic and implementation issues existed, as reflected in 8 findings and 12 OFIs. NWP has assigned actions for the findings in its corrective action system but had not resolved any by the time this EA assessment ended. In addition, in a letter of direction, the CBFO Contracting Officer proactively directed NWP to address the CBFO-identified "continuing training issues across multiple functional areas and organizations" by examining NWP's "training programs(s) and associated corrective actions."

Federal Oversight Conclusions

CBFO is meeting the requirements of DOE Order 426.2 and has implemented a functioning oversight program for evaluating the effectiveness of NWP's training and qualification programs. The CBFO oversight program appropriately includes training as a part of broader functional area assessments. CBFO actively and effectively conducts oversight of NWP training program activities and provides the results to the contractor to improve safety and mission performance.

4.0 BEST PRACTICES

No best practices were identified during this assessment.

5.0 FINDINGS

No findings were identified during this assessment.

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.

Nuclear Waste Partnership, LLC

Deficiency D-NWP-1: WP 14-TR.01 does not identify the requirement to include the TIM in the scope of triennial assessments. (DOE Order 426.2, attachment 1, CRD, chapter I, 4.a.(3))

Deficiency D-NWP-2: The NWP Technical Training and Procedures Department Training Lead is performing a management function without the required qualification. (TIM, appendix 1, table 1)

Deficiency D-NWP-3: NWP has not performed training program assessments at the required three-year frequency. (DOE Order 426.2, attachment 1, CRD, chapter I, 4.a.(3))

Deficiency D-NWP-4: NWP is not fully effective in correcting training program issues. (DOE Order 226.1B, attachment 1, CRD, section 2.b.(3)(b))

Deficiency D-NWP-5: NWP has not performed a JTA for WFD authorization card FF-01 as required. (DOE Order 426.2, attachment 1, CRD, chapter I, 4.a, and WP 14-TR3008, *Analysis and Design*, section 5.2)

Deficiency D-NWP-6: One WFD crew Lieutenant was not a qualified WIPP Level I Instructor, and one WFD crew Lieutenant's and the Fire Chief's WIPP Level I Instructor qualifications had lapsed. (WP 14-TR3308, sections 5.1.1 and 5.1.2, and WP 12-FP.04, sections 2.3 and 2.4)

Deficiency D-NWP-7: The NWP Qualified Watch List process does not ensure that at least one WFD EMT on shift is an EMT-I or EMT-P. (BNA, section 7.1; DOE/WIPP 17-3573, section 4.4.4.1)

Deficiency D-NWP-8: NWP qualification of WHEs does not include supervisory elements or skills for supervising TRUPACT III handling. (DOE Order 426.2, attachment 1, CRD, chapter I, 4.b(5)(a))

Deficiency D-NWP-9: NSE continuing training and requalification was not completed within the required two-year cycle. (DOE Order 426.2, attachment 1, CRD, chapter I, 7.a(1) and 8)

7.0 OPPORTUNITIES FOR IMPROVEMENT

EA identified four 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.

Nuclear Waste Partnership, LLC

OFI-NWP-1: Consider implementing a consistent process or practice for documenting continuing training.

OFI-NWP-2: Consider developing and issuing the task cards for safety basis development (NS-T2), hazard analysis development (NS-T3), accident analysis development (NS-T4), and control selection and functional classification (NS-T5), and then documenting equivalencies to those task cards for all the subcontractors who do NWP's safety basis development and maintenance work.

OFI-NWP-3: Consider revising WP 12-NS.09, section 5.2.1 to explicitly state that, in accordance with DOE Order 426.2, continuing training is to be "administered on a cycle not to exceed two years."

OFI-NWP-4: Consider implementing a more structured, systematic approach to continuing training for NSEs.

Appendix A Supplemental Information

Dates of Assessment

Onsite Assessment: February 14-17, 2022

Office of Enterprise Assessments 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
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