



Independent Assessment of the Safety Management Program at Western Area Power Administration

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Acronyms

ACGIH	American Conference of Governmental Industrial Hygienists
ANSI	American National Standards Institute
ASSP	American Society of Safety Professionals
ASTM	American Society for Testing and Materials
CFR	Code of Federal Regulations
CIT	Craftsman-in-training
CRAD	Criteria and Review Approach Document
DOE	U.S. Department of Energy
DSWR	Desert Southwestern Region
EA	Office of Enterprise Assessments
ECP	Employee Concerns Program
HQ	Headquarters
IH	Industrial Hygiene
ISM	Integrated Safety Management
ISMS	Integrated Safety Management System
JHA	Job Hazard Analysis
kV	Kilovolt
LOTO	Lockout/Tagout
NFPA	National Fire Protection Association
OFI	Opportunity for Improvement
ORPS	Occurrence Reporting and Processing System
OSHA	Occupational Safety and Health Administration
PPE	Personal Protective Equipment
PSMM	Power System Maintenance Manual
PSOM	Power System Operations Manual
PSSM	Power System Safety Manual
RMR	Rocky Mountain Region
SAIA	Scaffold and Access Industry Association
SME	Subject Matter Expert
SMP	Safety Management Program
SMS	Safety Management System
SNR	Sierra Nevada Region
SOH	Safety and Occupational Health
TLV	Threshold Limit Value
UGPR	Upper Great Plains Region
WAPA	Western Area Power Administration

INDEPENDENT ASSESSMENT OF THE SAFETY MANAGEMENT PROGRAM AT WESTERN AREA POWER ADMINISTRATION

Executive Summary

The U.S. Department of Energy (DOE) Office of Enterprise Assessments (EA) conducted an independent assessment of the effectiveness of the safety management program (SMP) at the Western Area Power Administration (WAPA) from February to July 2024. This assessment, which WAPA requested, focused on the WAPA Headquarters institutional SMP and evaluated its implementation within the framework of integrated safety management (ISM) across WAPA's Desert Southwestern, Sierra Nevada, Rocky Mountain, and Upper Great Plains Regions. WAPA is also under the regulatory jurisdiction of the Occupational Safety and Health Administration.

EA identified the following strengths, including two best practices:

- WAPA provides comprehensive fall protection training that includes hands-on, real-world simulation, inspection of personal harnesses, and self-rescue techniques. (Best Practice)
- WAPA dedicates regional craft training weeks annually, allowing workers to receive safety training based on regional training priorities. (Best Practice)
- WAPA has robust and effective craft apprenticeship and craftsman-in-training programs.
- WAPA has generally effective programs and procedures for high-risk activities involving high-voltage work, fall protection, and motor vehicle safety due to significant driving distances to the work locations.
- Employees' right to stop work to address safety concerns is clearly identified, communicated, and understood.
- WAPA's Safety and Occupational Health Council, regional safety committees, and weekly crew safety meetings have been effective mechanisms for sharing safety information and lessons learned.

EA also identified several weaknesses, including four findings, as summarized below:

- WAPA has not established an effective integrated safety management system (ISMS) program, including developing an ISMS description document, consistent with DOE requirements. This has adversely impacted the effectiveness of WAPA's SMP in ensuring worker safety. (Finding)
- WAPA has not developed and implemented an effective employee concerns program. (Finding)
- With the exception of fall protection training, WAPA has not developed and implemented an effective formal safety and occupational health training program to ensure that workers receive all required training based on their job assignment, training is appropriately tracked, and the responsibilities for verifying worker training prior to performing work are understood. (Finding)
- WAPA does not enter reportable events into the Occurrence Reporting and Processing System (ORPS) database. The ORPS exemption memorandum provided by WAPA is not in compliance with DOE Order 251.1E, *Departmental Directives Program*. (Finding)
- WAPA has not effectively implemented important aspects of its SMP. Weaknesses were identified in the following areas:
 - Job hazard analysis (JHA) program, including addressing hazards of routine work activities
 - Tracking, closing, or mitigating safety issues effectively and in a timely manner
 - Identifying and analyzing facility-level hazards in maintenance facilities, warehouses, regional offices, substation control rooms, and battery rooms or battery storage areas

- Adequacy of industrial hygiene exposure assessments
- Completing required audits of the lockout/tagout and electrical safety programs.

In summary, WAPA has established generally effective mechanisms under the Occupational Safety and Health Administration regulatory construct that support its SMP implementation of work conducted across the regions. However, WAPA has not established an effective ISMS program, including an ISMS description document, which has contributed to numerous implementation weaknesses and impacted the safe conduct of work. Other important weaknesses were identified in the areas of worker training and qualification, ORPS reporting, and the employee concerns program. Additionally, deficiencies were identified with the JHA program and addressing hazards of routine work activities, closing or mitigating issues effectively and timely, the adequacy of addressing industrial hygiene exposure assessments, and completing the required audits of the lockout/tagout and electrical safety program. Until the concerns identified in this report are addressed, including implementing ISM and the JHA program, some workplace hazards may not be properly identified or controlled, resulting in reduced protection of worker safety and health at WAPA.

INDEPENDENT ASSESSMENT OF THE SAFETY MANAGEMENT PROGRAM AT WESTERN AREA POWER ADMINISTRATION

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 the effectiveness of the safety management program (SMP) at Western Area Power Administration (WAPA). This assessment focused on WAPA's SMP institutional program and its implementation with respect to work activities performed across WAPA's Desert Southwestern Region (DSWR), Sierra Nevada Region (SNR), Rocky Mountain Region (RMR), and Upper Great Plains Region (UGPR). This assessment was requested by WAPA and was conducted from February to July 2024.

WAPA is a government-owned and operated organization that is under the regulatory jurisdiction of the Occupational Safety and Health Administration (OSHA). WAPA is also required to comply with DOE orders, including DOE Order 450.2, *Integrated Safety Management*, which DOE established to provide a framework to systematically integrate safety into the planning and conduct of work activities. Integrated safety management (ISM) defines the following five core functions: define the scope of work, identify and analyze hazards, develop and implement hazard controls, perform work within controls, and provide feedback and improvement, to ensure systematic and effective work planning and control.

In accordance with the *Plan for the Independent Assessment of Safety Management Program at the Western Area Desert Southwest and Sierra Nevada Regions, March 2024*, and the *Plan for the Independent Assessment of Safety Management Program at the Rocky Mountain and Upper Great Plains Regions, May 2024*, this assessment evaluated the effectiveness of WAPA's implementation of its SMP within the framework of the ISM core functions.

2.0 METHODOLOGY

The DOE independent oversight program is described in and governed by DOE Order 227.1A, *Independent Oversight Program*, which EA implements 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, the criteria used to guide this assessment were based on selected objectives and criteria from the following criteria and review approach documents (CRADs):

- EA CRAD EA-32-03, Rev. 1, *Industrial Hygiene Program*
- EA CRAD EA-32-10, Rev. 0, *Construction Safety*
- EA CRAD EA-32-11, Rev. 0, *Control of Hazardous Energy (Lockout/Tagout)*
- EA CRAD EA-32-12, Rev. 0, *Material Handling Safety*
- EA CRAD EA-32-13, Rev. 1, *Electrical Safety*.

Because WAPA is under the regulatory jurisdiction of OSHA, additional criteria to guide this assessment were based on 29 CFR 1960, *Basic Program Elements for Federal Employee Occupational Safety and Health Programs and Related Matters*, and DOE Order 440.1B, *Worker Protection Program for DOE (Including the National Nuclear Security Administration) Federal Employees*.

EA examined key documents, such as WAPA's Power System Operations Manual (PSOM), Power System Safety Manual (PSSM), Power System Maintenance Manual (PSMM), work packages, facility inspection results, vehicle inspection and maintenance records, job hazard analyses (JHAs), policies, and training and qualification records. EA also interviewed key personnel responsible for developing and executing the associated programs; observed work activities performed by craft workers (linemen, substation electricians, communications personnel, and meter and relay workers); and walked down selected maintenance facilities across DSWR, SNR, RMR, and UGPR, focusing on hazard identification and controls. Work observations were all associated with maintenance activities including substation work, high-voltage electrical power line work, meter and relay work, and communications work. The members of the assessment team, the Quality Review Board, and the management responsible for this assessment are listed in appendix A.

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

3.0 RESULTS

3.1 Institutional Safety Management Program

This portion of the assessment evaluated the WAPA Headquarters (HQ) SMP and applicable documents, including but not limited to: management system assessment, inspection, and corrective (abatement) action procedures; worker training and qualification; electrical safety; fall protection program; equipment and motor vehicle safety program; industrial hygiene (IH); reporting of occurrences and occupational injuries/illnesses; and the employee concerns program (ECP), which collectively are intended to support the safe performance of work in accordance with DOE Order 440.1B.

Institutional Safety Management Program and Governing Documents

WAPA Order (O) 440.1C, *Safety and Occupational Health Program*, and supplemental manuals provide generally adequate requirements for worker protection. WAPA O 440.1C establishes an appropriate basis for worker protection through a combination of applicable sections or chapters in the PSSM; PSMM; PSOM; and written work procedures, JHAs, and permits. The PSSM is WAPA's authoritative directive for safety and health work standards; its requirements take precedence over rules, procedures, and guidance contained in other WAPA documents. WAPA O 440.1C appropriately addresses employees' right to stop work, which is included in the site's training for workers; communicated via brochures, posters, a human performance improvement stop work authority video, and JHAs; and discussed during safety meetings.

Well-qualified safety professionals manage the development and implementation of the institutional SMP. At the institutional level, staff include a certified safety professional, a certified industrial hygienist, and construction and maintenance safety subject matter experts (SMEs). At the regional level, each of the safety and occupational health (SOH) departments of the four WAPA regions are staffed by a qualified SOH manager supported by safety specialists, several of whom previously held journeymen positions, have extensive utility field experience, and are currently certified utility safety professionals.

WAPA has established effective safety communication forums and mechanisms. Members of the WAPA Safety and Occupational Health Council, which includes WAPA HQ safety personnel and the four regional SOH managers, meet monthly to communicate safety goals and information. Additionally, each region has a safety committee operating under a written charter that conducts meetings quarterly and is attended by management and bargaining unit representatives. Meeting minutes are appropriately documented and distributed throughout the region. Learning summaries and lessons learned are discussed

and distributed at these regional quarterly safety committee meetings and further disseminated to employees. Safety is also discussed during weekly crew safety meetings.

While WAPA has established some adequate elements of an institutional SMP, the following weaknesses were identified:

- Contrary to DOE Order 450.2, *Integrated Safety Management*, section 4.a, and WAPA O 440.1C, section 1.1, WAPA has not established an effective integrated safety management system (ISMS) program, which has adversely impacted the implementation of the ISM core functions for activity-level work. WAPA has not developed an ISMS description document in accordance with DOE requirements. (See **Finding F-WAPA-1.**) Not establishing an effective ISMS program has precluded WAPA's ability to systematically integrate safety into management and work practices at all levels, as discussed in section 3.2 below.
- Contrary to DOE Order 440.1B, section 4.i.(2), WAPA's JHA requirements listed in the PSMM, chapter 12, section 5.2.5.1 does not adequately address the hazards and need for documented JHAs for routine work activities. (See **Deficiency D-WAPA-1.**) Not specifying hazard analysis requirements for routine work where hazards exist presents a potential risk to worker safety. In the PSSM, section 17.2, and PSMM, chapter 12, section 5.2, the JHA process is limited to specific, higher-risk work activities.
- The PSMM, chapter 12, section 5.2.3 does not adequately address expectations for work step and task breakdown to enable the proper identification of hazards and controls at the task level. In addition, WAPA has not developed a hazard analysis procedure to ensure the proper and consistent preparation of JHAs, including the use of a graded approach for lower hazard work. Further, WAPA does not have a consistent approach for records management, change control, or review and approval of JHAs. JHAs are created by foremen who do not have formal training in JHA preparation, with optional review by managers and regional safety SMEs. (See **OFI-WAPA-1.**)
- The safety managers of two regions (DSWR and SNR) report to administrative managers while the two other regions (UGPR and RMR) report directly to regional managers. Safety offices not reporting directly to executive leadership can result in a diminished focus on safety, conflicting priorities, and limited authority. (See **OFI-WAPA-2.**)

Management System Assessment, Inspection, and Corrective (Abatement) Action Procedures

WAPA O 440.1C, chapter 4, adequately addresses WAPA's SOH management assessment and inspection programs, including corrective (abatement) action and follow-up. Positive elements include requirements for periodic WAPA HQ (3-5 years) in-depth assessments of each region's safety management system (SMS); risk-based annual SOH element assessments; and annual manned facility SOH inspections. In addition, specific procedures appropriately address assessment team composition, initial meeting, fact finding, exit briefing, reporting, action, and follow-up. Regional safety managers' annual facility inspection results are appropriately entered into regionally developed spreadsheets or other software tools to track resolution. The status of corrective actions is reviewed during regional quarterly safety committee meetings in three of the four WAPA regions. In UGP, the SOH department tracks findings directly with the manager responsible for the corrective action. However, the following weaknesses were identified:

- Contrary to WAPA O 440.1C, chapter 4, WAPA HQ has not implemented the periodic (3-5 year) SMS or the SOH annual program element assessment requirement. (See **Deficiency D-WAPA-2.**) By not implementing this oversight program requirement, WAPA leadership cannot effectively evaluate the status of SMS and SOH program implementation requirements across the four regions and use the results for feedback and continuous improvement.

- Contrary to WAPA O 440.1C, chapter 4, section 4, WAPA regions have not fully implemented all required annual facility inspection procedures and are not correcting or addressing deficiencies in a timely manner. (See **Deficiency D-WAPA-3.**) By not fully implementing the procedures and correcting deficiencies in a timely manner, identified issues could potentially expose employees to unsafe working conditions. The following WAPA requirements were not consistently implemented within the regions:
 - Corrective (abatement) action plans, including immediate actions taken to protect workers while the issue is being corrected, are not consistently developed within the required 30 days.
 - No written postings of unsafe working conditions were observed near work locations with previously identified but uncorrected issues.
 - Issues identified during annual facility SOH inspections are not adequately addressed (mitigated or closed) in a timely manner. Specifically:
 - Field observations confirmed that none of the eight deficiencies identified in the 2022 facility safety inspection performed at the Gering, Nebraska, HQ and Substation had been corrected.
 - Field observations confirmed that most deficiencies identified during the September 2023 Mead Maintenance Building annual facility inspection had not been corrected.
 - An inoperable vehicle bay exhaust system at the Loveland, Colorado, maintenance facility has remained uncorrected for several years, despite worker complaints and an ongoing potential for exposure to exhaust fumes and carbon monoxide, particularly during the winter months.

Worker Training and Qualification

WAPA, in consultation with the International Brotherhood of Electrical Workers union, the U.S. Department of Labor, and other stakeholders, has developed and implemented robust and effective craft apprenticeship and craftsman-in-training (CIT) programs. WAPA's craft apprenticeship and CIT programs are effectively managed at the WAPA HQ level. Craft workers' progress is tracked and verified to ensure that worker training is complete. With respect to topical training programs, worker training for fall protection and high-voltage electrical switching is comprehensive and tailored to a worker's assigned responsibilities. WAPA's annual training for fall protection trainers and specialists from all regions, conducted at the Mead facility, is considered a **Best Practice** because the training includes hands-on, real-world simulation, inspection of personal harnesses, and self-rescue techniques. Through interactive simulations, workers experience first-hand the challenges associated with fall hazards, practice the skills they have learned, and engage with peers in an environment that fosters a collaborative experience. Additionally, dedicated craft training weeks conducted annually in each region are considered a **Best Practice** because they provide an opportunity for workers to receive safety training that supports regional training priorities. Finally, WAPA has established committees for fall protection and confined space programs to appropriately focus on worker training for these higher risk activities.

While craft apprenticeship and CIT programs are effective, contrary to DOE Order 440.1B, WAPA O 440.1C, and the PSSM, WAPA has not developed and implemented an effective SOH training program to ensure that workers receive all required training based on their job assignment, training is appropriately tracked, and the responsibilities for verifying worker training prior to performing work are understood. (See **Finding F-WAPA-2.**) A lack of an effective training program could result in worker injuries due to employees not understanding hazards associated with work activities. Specifically:

- Contrary to DOE Order 440.1B, section 4.k, and attachment 1, section 10; and WAPA O 440.1C, chapter 3, section 3.a.(1), WAPA has not ensured that workers receive all required training based on their job assignments. A WAPA-wide training matrix per WAPA O 440.1C, chapter 3, section 3.a.(4), has not been updated, and regions are currently developing their own matrices or job safety guides to ensure that workers receive all required training to perform their assigned tasks. For example, DSWR electricians are required to complete courses in machine guarding and power tool safety, whereas SNR electricians are not. As craft workers are periodically assigned to support other regions, this approach could lead to confusion regarding worker training and qualifications, resulting in injuries or illnesses.
- Contrary to WAPA O 440.1C, chapter 3, section 3.a.(1), which states that “Human Resources will track employee training completion via Learning Nucleus,” interviewed safety staff explained that the Human Resources Department has limited involvement in tracking completion of worker SOH training; most SOH training is provided by WAPA safety staff or outside training vendors, and few courses are provided through Learning Nucleus. Regions use a combination of spreadsheets and Learning Nucleus, which is not an effective process in determining whether a worker has completed the necessary training to complete an assigned work task. Of the four regions and HQ SOH, only RMR has a dedicated person to coordinate safety training, which has resulted in improvements in tracking the completion of required training. During several observed work activities, workers had not completed some SOH training courses required for the work, or their training records could not be located by the WAPA safety staff (see section 3.2, *Performing Work Within Controls*).
- Contrary to the PSSM, section 2.2.5, the responsibility for ensuring that a worker is current on all required training prior to performing an assigned task is not well understood. Not verifying that workers have all the required training to complete a task may result in an increased risk of injuries and illnesses. The PSSM, section 2.2, states that the supervisor is considered to be the person directly in charge of the work and is responsible for ensuring that workers are trained, and that documentation of SOH-related training is maintained and available. Several interviewed foremen, who serve as field supervisors, asserted that the regional safety staff is responsible for ensuring that their workers are adequately trained; however, the regional safety staff do not assume this responsibility.

Electrical Safety

The PSSM, PSOM, and PSMM generally effectively integrate the requirements of 29 CFR 1910.269, *Electric power generation, transmission, and distribution*, and National Fire Protection Association (NFPA) 70E, *Standard for Electrical Safety in the Workplace*, for electrical hazards risk assessments for high-voltage hazardous energy, shock and arc flash, safe work practices, training, lockout/tagout (LOTO), and personal protective equipment (PPE) for electrical worker safety. Additionally, PSMM, chapter 18, and WAPA O 440.1C appropriately address some electrical safe work practice requirements of 29 CFR 1910.147, *The control of hazardous energy (lockout/tagout)*, and NFPA 70E for work at or below 600 volts. However, contrary to 29 CFR 1910.147(c)(6) and NFPA 70E, articles 110 and 120, WAPA has not completed the required LOTO annual inspection or triennial electrical safety program audit. (See **Deficiency D-WAPA-4**.) Not performing program inspections and audits can result in unidentified program deficiencies potentially exposing employees to hazardous energy.

Fall Protection Program

The WAPA fall protection program is well developed and compliant with applicable OSHA standards for general industry (29 CFR 1910, *Occupational Safety and Health Standards*) and construction (29 CFR 1926, *Safety and Health Regulations for Construction*). PSSM, section 16, adequately defines WAPA’s fall protection policy while the PSMM, chapter 2, establishes the methods, equipment, and training requirements for employees working at elevated positions.

WAPA fall protection policy appropriately requires that all fall protection equipment meet or exceed current American National Standards Institute/American Society of Safety Professionals (ANSI/ASSP) Z359 fall protection standards and/or American Society for Testing and Materials (ASTM) F887, *Standard Specification for Personal Climbing Equipment*. The WAPA Fall Protection Committee is appropriately staffed with SMEs who oversee fall protection program implementation and adequacy of worker training, and who ensure the program is maintained current with the advent of new processes and technologies. The Fall Protection Committee appropriately meets annually to revise the PSSM and PSMM, as needed, based on changes to regulations and industry consensus standards.

Further, regional fall protection sub-committees perform annual reviews and necessary updates of climbing/fall protection risk assessments. An annual fall protection train-the-trainer workshop was established to review WAPA, OSHA, and other industry-related incidents and lessons learned; explore new fall protection technologies and equipment; and conduct competent person training. Regions have appropriately established training facilities equipped with structures and equipment to replicate the job environment that crafts normally encounter. A WAPA fall protection qualified person(s) is assigned and available to respond to questions or concerns regarding engineering data for fall protection anchorage points and ladder safety systems. Additionally, a WAPA fall protection SME serves as a voting member of the ANSI/ASSP Z359 Fall Protection Committee, ensuring that WAPA's fall protection program benefits from national discourse on fall protection issues.

Equipment and Motor Vehicle Safety Program

The WAPA equipment and motor vehicle safety program is well developed and compliant with state highway safety, motor vehicle, and licensing requirements. WAPA O 440.1C and PSSM, section 5, contain detailed requirements for motorized equipment operation and maintenance, including motor vehicles and heavy equipment, such as cranes, derricks, line trucks, forklifts, and aerial devices. Operation of equipment and motor vehicles is adequately restricted to employees who are properly trained, appropriately licensed, hold medical certificates, and are randomly tested for controlled substances and alcohol.

WAPA effectively manages vehicle hazards by providing safety information, establishing and enforcing safety policies, and planning and optimizing asset utilization. WAPA's fatigue management policy adequately limits the number of combined hours for work and travel time to mitigate the risk associated with long drive times. Detailed investigations of vehicle incidents and near misses are conducted as shown in WAPA's Judgement of Needs Reports and learning summaries published in the 2023 Safety Publication Review. Several recommendations from these investigations have led to modifications and additions to improve the PSSM. Reviews of learning summaries arising from vehicle incidents are a frequent topic of discussion during safety meetings. RMR has begun to use Fleetio® (fleet management system software) to help manage vehicle and equipment day to day operations, including maintenance, inspection, and repairs. Reviewed fleet management and third-party vendor records demonstrate that most equipment and motor vehicles at WAPA receive their annual inspection in accordance with OSHA, the U.S. Department of Transportation, and ANSI/Scaffold and Access Industry Association (SAIA) requirements.

Industrial Hygiene

WAPA O 440.1C includes several safety and health IH procedures that address many of the IH hazards likely to be experienced by the WAPA workforce. WAPA's IH program is staffed by one experienced certified industrial hygienist within the WAPA HQ Safety organization. The Industrial Hygienist has drafted a detailed and methodical *Tactical Action Plan and Strategic Goals* white paper that outlines a reasonable path forward to develop a WAPA IH exposure assessment and sampling program to meet

DOE requirements. Reviewed documents demonstrate that WAPA has completed limited IH exposure sampling, primarily for noise. However, the following weaknesses were identified:

- Contrary to DOE Order 440.1B, section 4.i.(3), and attachment 1, sections 5.b.(1) and 5.b.(7), WAPA has not adequately addressed exposure assessments for chemical (i.e., silica, lead, and herbicide), physical (i.e., heat stress and noise), biological, and ergonomic hazards using recognized exposure assessment methodologies and workplace monitoring, nor has WAPA conducted baseline surveys of all work areas or operations to identify and evaluate potential worker health risks. (See **Deficiency D-WAPA-5.**) Inadequate exposure assessments and a lack of baseline surveys could result in unanticipated worker exposures to unrecognized hazards.
- Neither WAPA O 440.1C nor the PSSM addresses heat stress to ensure that the American Conference of Governmental Industrial Hygienists (ACGIH) threshold limit values (TLVs) are not exceeded. The potential for heat stress was one of the most frequently identified IH hazards observed by EA and identified in reviewed JHAs. Consequently, as discussed in section 3.2, *Identifying and Analyzing Hazards*, each region is implementing inadequate hazard controls for heat stress due to a lack of HQ institutional heat stress policies and procedures. (See **OFI-WAPA-3.**)

Reporting of Occurrences and Occupational Injuries/Illnesses

WAPA O 440.1C, chapter 2, *Table of Reporting Requirements and Mishap Reporting Flowchart*, adequately addresses some elements of DOE Order 232.2A, *Occurrence Reporting and Processing of Operations Information*, and DOE Order 231.1B, *Environment, Safety and Health Reporting*. Uniform reporting, investigation, and classification criteria of injuries/illnesses and incidents have been created, supporting a consistent approach across WAPA's regions. Further, the reviewed Computerized Accident/Incident Reporting System (CAIRS) database demonstrates that WAPA is reporting injuries/illnesses, and the OSHA 300A Summary posted per 29 CFR 1904.32 (a) and (b) was observed during field inspections. However, contrary to DOE Order 232.2A, section 4.a.(1), WAPA does not enter reportable events into the Occurrence Reporting and Processing System (ORPS) database, and WAPA's SOH program does not address requirements to enter reportable events into the ORPS database. (See **Finding F-WAPA-3.**) EA consulted with EHSS-23, Office of Primary Responsibility, regarding WAPA's exemption memorandum from DOE Order 232.2A for ORPS reporting. EHSS-23 does not have any record of WAPA seeking advice regarding ORPS reporting exemption, and the memorandum WAPA provided is not in compliance with DOE Order 251.1E, *Departmental Directives Program*, requirements, which outlines the process for obtaining exemptions from DOE directives. Not entering reportable events into the ORPS database restricts the sharing of information within the DOE complex, limiting learning opportunities and continuous improvement. Further, WAPA O 440.1C allows the Chief Operating Officer to exclude occurrences from investigation, which could preclude learning and prevent similar future events.

Employee Concerns Program

The WAPA *Employee Concerns Program Guide*, dated 2016, describes the intake and processing of employee concerns and the confidentiality of the individual and appropriately assigns the program implementation responsibility to the ECP Manager. The ECP Manager explained that they have received one employee complaint in the last two years, which was reviewed and determined to not be in the scope of the ECP and was appropriately closed. However, contrary to DOE Order 442.1B, *Department of Energy Employee Concerns Program*, WAPA has not developed and implemented an effective ECP. (See **Finding F-WAPA-4.**) An ineffective ECP can hinder the prompt identification and resolution of employee concerns. The following weaknesses were identified:

- The 2016 ECP guide has not been updated to include the requirements in the current DOE Order 442.1B. WAPA has not approved implementing documentation for the ECP. (section 4.c)
- WAPA maintained records of ECP cases for fiscal years 2023 and 2024. However, WAPA does not have records of ECP cases for the requested period, calendar years 2021 through 2023. (appendix A, section 2)
- WAPA has not conducted assessments of its ECP to determine program implementation effectiveness. (appendix A, section 6)
- WAPA has not issued annual notices of the availability of the ECP. (appendix A, section 7)
- WAPA has not adequately communicated the availability and purpose of its ECP. Even though ECP information is posted on the WAPA SharePoint site, and a link is provided to report concerns, almost all interviewed employees across the regions were not aware of the ECP. (See **OFI-WAPA-4.**) (appendix A, section 7)
- WAPA has not sufficiently trained the ECP Manager to properly carry out their responsibilities for implementing the ECP. (appendix A, section 9)

Institutional Safety Management Program Conclusions

WAPA has generally effective SMP governing documents and procedures for high-hazard activities involving high-voltage work, fall protection, and equipment and motor vehicle safety. WAPA's comprehensive fall protection training and dedicated craft training weeks, conducted annually in each region, were considered best practices. However, weaknesses were identified with the lack of an effective ISMS program, which has adversely impacted the implementation of the ISM core functions; the lack of JHAs and formal hazard analysis for routine work activities; conduct of management assessment, inspection, and corrective actions (hazard abatement); employee safety training; completion of LOTO inspection and audit; IH exposure assessments event reporting; and the management of employee concerns.

3.2 Safety Management Program Implementation

This portion of the assessment evaluated WAPA's implementation of its worker protection program through the five core functions of ISM: defining the scope of work, identifying and analyzing hazards, developing and implementing hazard controls, performing work within controls, and providing feedback and making continuous improvements.

Defining the Scope of Work

The work scopes for 10 out of 25 observed work activities, provided through a combination of work orders, JHAs (if required by WAPA manuals), written work procedures for some high-hazard tasks (e.g., switching, live line work), and tailboard briefings conducted prior to beginning a work activity, were sufficiently detailed to perform major tasks and identify hazards and controls. For example:

- The work order and the JHA for the Sundance Substation breaker maintenance work adequately identified the tasks to be accomplished, including clearance placement and removals, testing deenergized status, hanging and removing grounds, and breaker cabinet maintenance tasks. (DSWR)
- The work order and the JHA for the Terry Ranch Substation breaker maintenance and testing adequately identified the scope of work and sequence of all steps needed to complete the work. (RMR)

- The JHA to replace insulators on several towers located along the Keswick/Obanion transmission line, coupled with a 230-kilovolt (kV) outside phase hot stick procedure, adequately identified the overall work scope, including the work steps, hazards, and most controls for the live line maintenance work involving tower climbing, working aloft, raising and lowering tools, and hot sticking to replace the insulators. (SNR)

However, contrary to WAPA O 440.1C, section 1.1.(1), the remaining 15 observed work activities did not adequately define the scope of work and associated work tasks to allow for the identification and control of all hazards. (See **Deficiency D-WAPA-6.**) Not properly defining and documenting comprehensive work scopes and associated tasks has resulted in some activity-level hazards and appropriate controls being missed. Specifically, reviewed work scopes for corrective maintenance, battery maintenance, new equipment installation, commissioning, and routine work activities were not sufficient, as described below:

- For three corrective maintenance work observations, the reviewed work scopes in work orders generated in Maximo® (a suite of computer applications used for asset monitoring and maintenance management) identified the work topic but did not provide sufficient work steps to define the work activity. One example was the corrective maintenance work to replace a high-voltage panel meter at the Blue Mesa Power Plant (RMR), for which there was no documented work scope in the work order or job plan that detailed work steps, hold points, or any other work procedure to conduct the meter replacement in an orderly and safe manner.
- For two battery maintenance work observations, the reviewed work scopes, when unaccompanied by a JHA or an energized electrical work permit, were not sufficient to identify potential electrical or chemical hazards and document the appropriate PPE. In one example, battery maintenance performed at the Raspberry Microwave Station (RMR) was performed without a JHA, even though such maintenance involved electrical and chemical hazards that required hazard controls (e.g., PPE). In another example, the work order for the Valley Farm Substation (DSWR) digital microwave radio system maintenance appropriately contained work steps for communications systems testing but did not address the battery maintenance work that was also performed, nor was there a JHA to document the hazards and controls associated with adding distilled water to battery cells and associated battery testing and cleaning.
- Three work observations involving new equipment installations were not sufficiently described (or in some cases not described at all) within a work document. For example, most of the work tasks associated with the new station service installation performed by electricians at the Spence Substation (RMR) were not described in the JHA, work orders, or job plans. As a result, the JHA did not identify hazards and hazard controls associated with mounting and testing a new transformer, installing three new panels and disconnects in the substation yard, running several hundred yards of new cable, installing new cable in substation panels, disconnecting existing power from the local utility, initial and final switching operations, and using heavy equipment.
- Four work observations involving equipment undergoing a commissioning process (PSMM, chapter 15) were not sufficiently defined and documented in work orders or JHAs such that the applicable commissioning process steps and acceptance criteria in chapter 15 could be identified. For example, the commissioning process for the new revenue meters installed at the Pinnacle Peak Substation (DSWR) is generically defined in PSMM, chapter 15, *Substation, DCS, Relaying and Control Commissioning Guide*; however, this chapter addresses a wide spectrum of equipment components and was not tailored to the equipment being commissioned. Although a work order and a JHA were prepared for this activity, neither document identified the applicable commissioning steps to be followed or the acceptance criteria.

- The PSSM does not require a JHA for some routine work activities, which can result in work scopes and task definitions not being sufficiently documented to allow for the proper identification and analysis of all work-related hazards and necessary controls. For example, the observed workshop in the Huron Crew Building (UGPR) housed equipment (e.g., drill presses, table saws, grinders, and welding set-ups) that is available for use by any WAPA employee or contractor, but no description of acceptable work tasks or limitations (e.g., working alone) was provided. Further, even though a variety of PPE was available for use with this equipment, no JHA or equipment instructions were available that identified the potential hazards or designated required controls (e.g., PPE, training, local ventilation) to mitigate those hazards. In another example, the PSSM did not require a JHA for the observed Coolidge Substation relay maintenance work activity because the 66- and 120-volt energized circuits in close proximity to the work were not within an arc flash boundary, even though this routine work activity involved live electrical hazards and several other industrial hazards.

Identifying and Analyzing Hazards

Activity-level work hazards were adequately identified in six reviewed JHAs, including the following three examples:

- The JHA for the Tracy Substation capacitor replacement (SNR) detailed and adequately identified the hazards associated with the observed work in the field. Potential hazards observed for this work activity included electrical shock, falling objects, accidents resulting from the backing up of heavy moving equipment, and tripping hazards, all of which were identified in the JHA.
- The JHA for the Ault Substation transformer maintenance and testing (RMR) adequately identified hazards and controls for switching, grounding, cabinet maintenance, elevated work, and transformer testing sequences.
- The JHA for the Rugby Substation cracked pad replacement (UGPR) appropriately identified the specific tasks needed to complete the work in sequential order along with the hazards and controls for each task, including shock and electrical hazards during clearance placement, malfunctioning tracer during voltage checks, walkthrough of clearance points, positioning of the scissors lift, completion of the repairs from the scissors lift, and removal of all grounds.

While activity-level work hazards were adequately identified in many JHAs, the following weaknesses were identified:

- Contrary to WAPA O 440.1C, section 1.1.(2), and DOE Order 440.1B, section 4.i, WAPA did not adequately analyze the hazards of all work tasks associated with the observed work. (See **Deficiency D-WAPA-7.**) Not properly identifying and analyzing all hazards places workers at increased risk of injury and illness. Specifically:
 - Five reviewed JHAs did not adequately identify or analyze one or more workplace hazards. For example, the JHA associated with the valve hall maintenance procedure at the Miles City Converter Station (UGPR) did not fully address the hazards and corrective actions required to perform the work safely; the JHA listed equipment, such as an overhead crane and rigging, but did not provide the hazards and mitigative procedures associated with that equipment. In another example, the JHA for the Sidney Converter Station capacitor replacements (RMR) identified but did not properly analyze a fall hazard. Observed workers who were using the JLG[®] aerial lift and working at heights of 8 to 10 feet had their fall protection self-retracting line (SRL) secured to a hip-level anchorage point on the lift platform. The SRL manufacturer's instructions provide an arrest distance of 4.5 feet when the SRL is secured to an overhead anchorage point. The JHA did not include a fall clearance analysis for the actual (lower) anchorage point to assess whether the

available fall distance would prevent ground contact or whether the SRL used was appropriate for the application.

- Two reviewed JHAs that were based on previous JHAs had not been tailored to reflect the current hazards and/or controls for observed work activities. For example, the JHA for the Tracy Substation capacitor replacement (SNR) identified a potential hazard for COVID-19 transmission when working in close quarters. However, the JHA hazard control of “wearing bandanas or masks when working in close proximity” was not followed. The interviewed foreman stated that he did not revise the previously used JHA from several years ago to remove the COVID-19 hazard and associated control.
- Contrary to DOE Order 440.1B, section 4.i, WAPA has not adequately identified and analyzed all facility-level hazards in maintenance facilities, warehouses, regional offices, substation control rooms, and battery rooms or battery storage areas. (See **Deficiency D-WAPA-8.**) Workers are at increased risk of injury and illness when facility-level hazards are not adequately identified, analyzed, and controlled in a timely manner. Although the regions conducted and documented required annual inspections, these facility inspections were not fully effective in identifying some potential hazards. The following examples were observed during facility walkdowns:
 - Unanalyzed hazards associated with maintenance shop equipment and welding machine operation
 - Warehouse shelving and mezzanine floors without placards stating their load ratings
 - Unanalyzed hazards associated with confined spaces in substation yards
 - Areas exhibiting a potential fall hazard that had not been analyzed, or areas where employees had been exposed to an unprotected edge of four feet or more
 - Unanalyzed noise and chemical hazards in maintenance shops
 - Many substation battery rooms across the regions have functioning room ventilation systems, but ventilation flowrates are rarely measured to ensure adequate ventilation that meets the battery room ventilation requirements of PSM, chapter 9.
 - None of the regions had a documented hazard analysis for hydrogen evolution in battery rooms.
- Contrary to DOE Order 440.1B, section 4.i.(3), worker exposures to chemical, physical, biological, and ergonomic hazards observed during work activities or facility walkthroughs have not been assessed through appropriate workplace monitoring. (See Deficiency D-WAPA-5 in section 3.1 above.) Specific observations include the following:
 - Worker exposures to welding activities and associated hazards have not been assessed by any of the regions or WAPA HQ; welding booths were identified during facility walkthroughs of maintenance shops in all four regions.
 - Potential heat stress concerns were identified during tailboard briefings and JHAs for work observed in each of the four regions. However, as discussed in section 3.1 above, WAPA has no institutional heat stress program to identify hazard controls for heat stress. The controls documented in JHAs for heat stress are typically limited to taking breaks and staying hydrated, but do not address acclimatization, training, emergency response, or monitoring for heat stress conditions to ensure that the ACGIH TLV for heat stress is not exceeded.
 - Where hearing protection postings were observed, there was often no sound level data to support the type of hearing protection required.

Developing and Implementing Hazard Controls

Hazard controls are established in the PSSM and WAPA maintenance and operations standards. For observed work activities, the PSSM and PSMM effectively conveyed precautions, hazards, and controls for broad categories of work, such as substation and communications facility work, live line work, and elevated work. Hazard controls defined in JHAs, switching instructions, safety permits, and job plans were generally adequate and effectively implemented in field work performance. For example:

- The switching request form associated with the removal from service of a 230/161 kV line to perform a breaker replacement and transformer maintenance at the Parker Substation (DSWR) adequately identified the process to establish and release clearance C-24-0305. A pre-numbered red safety tag matching the switching request form was observed placed at the substation location.
- The JHA for the replacement/repair of 230 kV static lines west of the Cheyenne Maintenance Facility (RMR) appropriately identified detailed corrective measures for the identified hazards and tasks.

While WAPA has developed and implemented some adequate hazard controls as noted above, the following weaknesses were identified:

- Contrary to WAPA O 440.1C, section 1.1.(3), WAPA did not properly develop and implement hazard controls for all observed work activities. (See **Deficiency D-WAPA-9.**) Workers are at increased risk of injury and illness when activity-level hazard controls are not adequately developed and implemented. Specifically:
 - For nine observed work activities, appropriate hazard controls were not identified or documented within the reviewed JHAs or posted on the equipment. For example, equipment operating at 600 volts and below, such as panelboards, switchboards, and transformer panels, were observed to be missing arc flash and shock hazard labeling required by PSMM, chapter 18, and NFPA 70E, article 130. Examples include panel L2A located in the Mead Maintenance Building (DSWR) and the KX6A transformer panel located outdoors at the Parker Substation (DSWR).
 - For four observed work activities, the hazard control specified in work documents (e.g., JHA) lacked documentation to ensure that the hazard control was adequately calibrated and/or inspected. For example, during the observed switching operation at the Sioux Falls Substation (UGPR) to restore substation electrical service following the replacement of two switches, a Fluke voltmeter was used by the relay and meter technicians to verify that the coupling capacitor voltage was within 1.5% of the expected voltage. However, interviewed relay and meter technicians stated that the Fluke voltmeter in use had never been calibrated.
 - For four observed work activities, the hazard control identified in the JHA was incomplete, incorrect, or inappropriate. For example, the “Other Requirements Checklist” section of the JHA for relay and meter maintenance work observed at the Eagle Butte Substation (UGPR) identified requirements for “identification of arc flash hazard and mitigation” and “provisions for LOTO” as part of the work activity; however, neither requirement was applicable to this task.
 - For five observed work activities, the JHA hazard control was not adequately described or too ambiguous to be implemented. For example, the JHA to replace insulators on Keswick/Obanion towers (SNR) identified hot sticking as a task but listed “Go over written procedures” and “Follow safety rules” as measures to prevent injury, with no reference to the specific procedures or safety rules intended to be followed.
- Contrary to DOE Order 440.1B, section 4.i, WAPA missed or inadequately implemented several facility-level hazard controls in maintenance facilities, warehouses, regional offices, substation control rooms, and battery rooms or battery storage areas. (See **Deficiency D-WAPA-8.**) Workers are at increased risk of injury and illness when facility-level hazard controls are not appropriately

developed or implemented. Although the regions conduct and document required annual inspections, facility inspections were not fully effective in developing or implementing some hazard controls in 20 observed maintenance facilities, operations centers, substations, and communication centers and in 29 battery rooms or battery storage areas. The following examples were observed during facility walkdowns:

- At several maintenance shops throughout the regions, some machine shop equipment (e.g., pedestal grinders, lathes, and band saws) were missing the required guarding, not securely fastened to the floor, or not being used for the intended purpose.
- Local ventilation exhaust systems for welding stations, in general, lacked certification or calibration records ensuring that the exhaust system was operating appropriately.
- Several electric panel boards were missing arc flash or shock hazard labels, or their access was obstructed.
- Several gas cylinders were inadequately secured or stored with other incompatible gases.
- Some maintenance facility eyewashes and showers were not inspected on a regular basis, per manufacturers' instructions, or maintained.
- In approximately half of the battery locations observed, a hydrogen detection system was not installed.
- Inconsistencies in the type of electrical equipment and wiring methods used in the lead-acid battery rooms was observed in all the WAPA regions. Some battery rooms had an electrical installation suitable for a hazard location whereas others did not.
- Throughout the WAPA regions, verification and testing of battery room ventilation has not been documented or conducted.
- In over half of the battery rooms observed, the posted signs were either missing or did not use the correct signal word (e.g., "Warning") and did not identify all the potential hazards.
- A few battery rooms did not have an eyewash/shower in the vicinity of the battery storage areas.

Performing Work Within Controls

Observed work was generally performed without incident and within defined hazard controls, with some exceptions. Planned work was effectively scheduled, authorized, and released using Maximo.

The observed tailboard briefings were effective tools for communicating work task hazards and controls. For example, the tailboard briefing for the Terry Ranch Substation (RMR) breaker maintenance and testing was detailed and thoroughly covered all planned specific work tasks along with the hazards and controls associated with each task, including specific citations from the PSSM and/or PSOM for each. Interviewed workers understood that they had stop/pause work authority.

Observed high-risk electrical work was rigorously authorized and performed in accordance with detailed, step-by-step work procedures. For example:

- Step-by-step switching procedures were followed verbatim when workers deenergized high-voltage lines in preparation for replacing revenue meters at the Pinnacle Peak Substation (DWSR) and during breaker maintenance work at the Sundance Substation. (DSWR)
- The switching procedure observed at the Sioux Falls Substation (UGPR), when electrical service was returned following the replacement of two switches, was meticulously performed by the Electrical Foreman II. During the switching process, two switch blades did not completely seat. An electrician

used a hot stick to complete the seating, but only after verifying the calibration and adequacy of the hot stick.

For observed work activities across all four regions, motor vehicle equipment and fall protection gear were in good condition and inspected as required by ANSI and OSHA standards and prior to performing work. For example:

- Equipment and motor vehicles, such as JLG aerial lifts, Bronto skylifts, and Altec® telescoping boom cranes and bucket trucks, are inspected annually, and records are appropriately maintained in accordance with ANSI/SAIA A92.2, *American National Standard for Vehicle-Mounted Elevating and Rotating Aerial Devices*; 29 CFR 1926; and PSSM, section 5.
- Insulated equipment used for potential high-voltage contact, such as the Bronto skylifts and Altec bucket trucks, undergo dielectric testing, as required by ANSI/SAIA A92.2.
- All harnesses used by SNR workers for the Tracy Substation capacitor replacement were inspected, and the inspection dates were appropriately noted on the harnesses.
- The annual inspections of observed material handling equipment and bucket trucks that were idle or in use were up to date.

While most observed work activities were performed within the hazard controls established in JHAs, special permits, job plans, and the PSSM and PSMM, the following weaknesses were identified:

- Contrary to WAPA O 440.1C, section 1.1.(4), WAPA did not perform work within the established controls defined in JHAs, work documents, and/or postings, or the hazard control implemented was inappropriate or ineffective for the work in three observed work evolutions. (See **Deficiency D-WAPA-10**.) Not performing work within the established controls places workers at increased risk of injury and illness. Specifically:
 - Contrary to 29 CFR 1910.140(c)(16), WAPA craft employees at the Tracy Substation (SNR) were observed lifting capacitors weighing approximately 80 pounds using a crane equipped with a synthetic web sling and a carabiner specifically designed for fall protection. Personal fall protection systems and their components (e.g., carabiner) must be used solely for employee fall protection and not for hoisting equipment or materials. Contrary to PSMM, chapter 18, workers were observed not wearing the combination of rubber Class 00 (inside) and leather (outside) gloves while working inside energized breaker panels with no cover at three different substations. The arc flash and shock protection warning labels posted on the breaker panels at these substations all stated that Class 00 voltage gloves must be used when work is performed within one foot of energized electrical circuits rated at 240 volts whenever the circuits' protective cover is removed. However, the JHAs associated with the 5- and 10-year breaker maintenance at the Fairview West and Rudyard Substations (UGPR) identified only the use of hard hats, safety glasses, gloves, and flame-resistant clothing as special tools and equipment. Similarly, at the Watford City Substation (UGPR), the JHA for 10-year breaker maintenance listed only "appropriate PPE" in the special tools and equipment section.
 - During the Rugby substation cracked pad replacement (UGPR), while most work was performed in accordance with required controls, one potentially unsafe elevated work practice was observed while working in the scissors lift. One of the workers needed slightly more height to insert the jumper into the new pad and did so by stepping on the toe board and leaning across the side rail rather than repositioning the scissor lift a few inches higher to accomplish the task more safely. The Foreman II appropriately noted this observation on the lessons learned section of the JHA for future reference and counseled the worker.

- Contrary to WAPA O 440.1C, section 1.f.(4), and DOE Order 440.1B, attachment 1, section 10.a, some workers were observed performing hazardous work activities for which there was no record that the worker had been trained on the hazards to which they were potentially exposed, or the controls intended to mitigate those hazards. (See Finding F-WAPA-2 in section 3.1 above.) For example:
 - During the capacitor changeout at the Tracy Substation (SNR), three workers were observed performing work in the bucket of an aerial lift. Only one of the workers was current with respect to aerial lift training, which is required by SNR to be completed every three years. One worker was a recent transfer from UGPR, and none of the worker's training records were available to the SNR staff, including aerial lift training. The third employee, an SNR electrician apprentice, had not completed the training.
 - Several workers performing the 230 kV static line replacement near Cheyenne (RMR) were either lacking or not current in some training required for the job (e.g., fall protection, fire extinguisher, or bloodborne pathogen training).
 - At the observed Sundance Substation breaker maintenance work (DSWR), one of the four electricians working the job was delinquent on their required cardiopulmonary resuscitation/automated external defibrillator/first aid training.
 - One of the tasks associated with the breaker replacement at the White Substation (UGPR) was to install new underground polyvinyl chloride (PVC) piping, which required the use of PVC glue. Although the glue hazards were identified in the JHA and the glue safety data sheet was attached to the JHA, none of the interviewed workers stated that they had completed Hazard Communication training, which was required for their work activities.

Feedback and Improvement

Across the regions, lessons learned/learning summaries were generally effectively communicated and discussed with workers during observed tailboard briefings and weekly and monthly safety meetings. For example:

- During an observed monthly SNR safety meeting, a near-miss incident that had recently occurred within UGPR was discussed in which acetylene gas was unexpectedly identified in used transformer oil.
- The observed tailboard briefing on the day following a rigging incident at the Tracy Substation included a detailed lessons learned discussion on the limitations of using carabiners designed for personal fall protection when hoisting loads with a crane.

While lessons learned are generally effectively communicated across the regions, contrary to WAPA O 440.1C, section 1.1.(5), two work activity feedback and improvement mechanisms were observed to be ineffective. (See **Deficiency D-WAPA-11.**) Not identifying, documenting, and communicating lessons learned can result in missed opportunities to reduce work injuries and illnesses. Specifically:

- Across the regions, the JHA section provided for documenting lessons learned, although optional, is rarely completed. Some regions have deleted this section from the JHA form, whereas others have used this JHA section to document topics not related to lessons learned, such as rescue plans.
- Few observed work activities concluded with a post-job review to reflect on the day's completed work and identify any potential lessons learned.

Safety Management Program Implementation Conclusions

WAPA has been successful in implementing elements of the ISM core functions for selective work activities, particularly for those work activities involving high voltage, switching, and fall protection. Observed tailboard briefings effectively communicated work task hazards and controls, high risk electrical work was rigorously authorized and performed in accordance with detailed step-by-step procedures, and motor vehicle equipment and fall protection gear were in good condition and inspected in accordance with industry standards. However, weaknesses were observed in all five ISM core functions with respect to activity-level work scopes, identifying and analyzing hazards, developing and implementing hazard controls, performing work with established controls, and feedback and improvement.

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 practices were identified as part of this assessment:

- WAPA's comprehensive fall protection training, conducted at the Mead facility, includes hands-on, real-world simulation, inspection of personal harnesses, and self-rescue techniques. Through interactive simulations, workers experience first-hand the challenges associated with fall hazards, practice the skills they have learned, and engage with peers in an environment that fosters a collaborative experience.
- WAPA dedicates regional craft training weeks annually, allowing workers to receive safety training based on regional training priorities.

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 must develop and implement corrective action plans for findings. Cognizant DOE managers must use site- and program-specific issues management processes and systems to manage the corrective actions and track them to completion.

Finding F-WAPA-1: WAPA has not established an effective ISMS program, which has adversely impacted the implementation of the ISM core functions for activity-level work. WAPA has not developed an ISMS description document in accordance with DOE requirements. (DOE Order 450.2, sec. 4.a, and WAPA O 440.1C, sec. 1.1)

Finding F-WAPA-2: WAPA has not developed and implemented an effective SOH training program to ensure that workers receive all required training based on their job assignment, training is appropriately tracked, and the responsibilities for verifying worker training prior to performing work are understood. (DOE Order 440.1B, sec. 4.k, and att. 1, sec. 10; WAPA O 440.1C, chap. 3, secs. 3.a.(1) and (4); and PSSM, sec. 2.2.5)

Finding F-WAPA-3: WAPA does not enter reportable events into the ORPS database, and WAPA's SOH program does not address requirements to enter reportable events into the ORPS database. (DOE Order 232.2A, sec. 4.a.(1))

Finding F-WAPA-4: WAPA has not developed and implemented an effective ECP. (DOE Order 442.1B, sec. 4.c, and app. A, secs. 2, 6, 7, and 9)

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.

Deficiency D-WAPA-1: WAPA's JHA requirements listed in the PSMM, chapter 12, section 5.2.5.1 does not address the hazards associated with routine work activities. (DOE Order 440.1B, sec. 4.i.(2))

Deficiency D-WAPA-2: WAPA HQ has not implemented the periodic (3-5 year) SMS or the SOH annual program element assessment requirement. (WAPA O 440.1C, chap. 4)

Deficiency D-WAPA-3: WAPA regions have not fully implemented all required annual facility inspection procedures and are not correcting or addressing deficiencies in a timely manner. (WAPA O 440.1C, chap. 4, sec. 4)

Deficiency D-WAPA-4: WAPA has not completed the required LOTO annual inspection or triennial electrical safety program audit. (29 CFR 1910.147(c)(6); NFPA 70E, articles 110 and 120)

Deficiency D-WAPA-5: WAPA has not adequately addressed exposure assessments for chemical, physical, biological, and ergonomic hazards using recognized exposure assessment methodologies and workplace monitoring, nor has WAPA conducted baseline surveys of all work areas or operations to identify and evaluate potential worker health risks. (DOE Order 440.1B, sec. 4.i.(3), and att. 1, secs. 5.b.(1) and 5.b.(7))

Deficiency D-WAPA-6: WAPA did not adequately define the overall scope or associated work tasks in 15 work observations as necessary to permit the identification and control of all hazards. (WAPA O 440.1C, sec. 1.1.(1))

Deficiency D-WAPA-7: WAPA did not adequately analyze the hazards of all work tasks associated with the observed work. (WAPA O 440.1C, sec. 1.1.(2), and DOE Order 440.1B, sec. 4.i)

Deficiency D-WAPA-8: WAPA has not adequately identified and analyzed all facility-level hazards or developed and implemented all facility-level hazard controls in maintenance facilities, warehouses, regional offices, substation control rooms, and battery rooms or battery storage areas. (DOE Order 440.1B, sec. 4.i)

Deficiency D-WAPA-9: WAPA did not properly develop and implement hazard controls for all observed work activities. (WAPA O 440.1C, sec. 1.1.(3))

Deficiency D-WAPA-10: WAPA did not perform work within established controls defined in JHAs, work documents and/or postings in three observed work evolutions. (WAPA O 440.1C, sec. 1.1.(4))

Deficiency D-WAPA-11: WAPA has not been effective in documenting lessons learned in JHAs or conducting post-job work reviews. (WAPA O 440.1C, sec. 1.1.(5))

7.0 OPPORTUNITIES FOR IMPROVEMENT

EA identified the OFIs shown below 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.

OFI-WAPA-1: Consider modifying the JHA process currently defined in the PSSM and PSMM to incorporate the following elements:

- Development of an institutional hazard analysis procedure to govern the preparation, review, and approval of JHAs, including expectations for proper work step and task breakdown for hazard and control identification. In addition, consider the use of a graded approach to ensure systematic hazard evaluation for all hazardous work.
- Performance of hazard analyses for all routine work activities with the potential for worker exposure to hazards or injury. Consider creating standing JHAs to document the tasks, hazards, and controls for all routine work where hazards exist but do not require a job-specific JHA.
- Records management, change control, and formal review and approval of JHAs.
- Development and implementation of an institutional JHA training program to ensure consistency of JHAs across the regions.
- Consider benchmarking with other DOE sites such as Lawrence Livermore National Laboratory, which is located in SNR.

OFI-WAPA-2: Consider having regional safety offices report directly to the regional managers to align with guidance found in ANSI/ASSP Z10.0 – 2019, *Occupational Health and Safety Management Systems*, which specifies that safety organizations reporting directly to executive leadership are more effective in supporting a safety process.

OFI-WAPA-3: Consider developing a WAPA heat stress procedure that meets the guidance provided in ANSI/ASSP A10.50-2024, *Standard for Heat Stress Management in Construction and Demolition Operations*.

OFI-WAPA-4: Consider appointing ECP coordinators for each region to better communicate and implement the ECP.

Appendix A Supplemental Information

Dates of Assessment

February 7 to July 11, 2024

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
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