Independent Assessment of the 2024 Emergency Management Annual Field Exercise at the Hanford Site

September 2024

Office of Enterprise Assessments
U.S. Department of Energy

Table of Contents

Acronyms

BED	Building Emergency Director
CPCCo	Central Plateau Cleanup Company, LLC
CRAD	Criteria and Review Approach Document
CWC	Central Waste Complex
DOE	U.S. Department of Energy
EA	Office of Enterprise Assessments
EAL	Emergency Action Level
EOC	Emergency Operations Center
EOC-SO	EOC Shift Office
EOS	Emergency Operations System
EPHA	Emergency Planning Hazards Assessment
ERO	Emergency Response Organization
FCP	Facility Command Post
FERO	Facility Emergency Response Organization
Hanford	Hanford Site
HENF	Hanford Emergency Notification Form
HMIS	Hanford Mission Integration Solutions, LLC
IC	Incident Commander
ICP	Incident Command Post
OFI	Opportunity for Improvement
PA	Protective Action
POC	Patrol Operations Center
RL	Richland Operations Office
SAE	Site Area Emergency
SED	Site Emergency Director
SITREP	Situation Report
WebEOC®	Web-based Emergency Operations Center Software
WRAP	Waste Receiving and Processing

INDEPENDENT ASSESSMENT OF THE 2024 EMERGENCY MANAGEMENT ANNUAL FIELD EXERCISE AT THE HANFORD SITE

Executive Summary

The U.S. Department of Energy (DOE) Office of Enterprise Assessments (EA) conducted an independent assessment of the Hanford Site (Hanford) emergency management program during the May 2024 emergency management annual field exercise at the Hanford Site. This assessment evaluated the effectiveness of the Richland Operations Office, the Hanford integrating contractor, Hanford Mission Integration Solutions, LLC (HMIS), and the Central Waste Complex operating contractor, Central Plateau Cleanup Company, LLC (CPCCo) in managing and maintaining emergency response organization performance. This assessment evaluated the program and performance against the requirements documented in DOE Order 151.1D, *Comprehensive Emergency Management System*.

EA identified the following strengths:

- The HMIS emergency operations system (EOS) was consistent with the operational concepts of the National Incident Management System, and HMIS had adequate capabilities to collect incident information from a well-equipped emergency operations center.
- CPCCo incident categorization and classification was accurate and timely.
- HMIS exercise planners effectively developed and implemented a challenging scenario designed to meet DOE exercise requirements for a severe event.

EA also identified two findings, as summarized below:

- HMIS has not adequately flowed down requirements for an effective EOS into the Hanford emergency plan or emergency plan implementing procedures, which has resulted in an unclear process for obtaining and maintaining situational awareness and disseminating a common operating picture among response components and external partners. (Finding)
- HMIS did not provide all required information to offsite stakeholders, including protective actions implemented, damages, potential and actual impacts, casualties, agencies involved, and the level of public and media attention. (Finding)

In summary, HMIS had adequate EOS capabilities to collect incident information and provided necessary expertise for incident analysis from a centralized, well-equipped emergency operations center. However, this assessment identified several areas of concern that impede the ability of responders to effectively respond to all-hazard emergencies at Hanford. Until the concerns identified in this report are addressed or effective mitigations are put in place the Hanford Site response effectiveness will be diminished.

INDEPENDENT ASSESSMENT OF THE 2024 EMERGENCY MANAGEMENT ANNUAL FIELD EXERCISE AT THE HANFORD SITE

1.0 INTRODUCTION

The U.S. Department of Energy (DOE) Office of Emergency Management Assessments, within the independent Office of Enterprise Assessments (EA), assessed the May 2024 emergency management annual field exercise at the Hanford Site (Hanford). This assessment was conducted as part of a series of assessments of emergency management exercises and programs at DOE sites. Assessment activities at Hanford were conducted from April to June 2024.

At Hanford, an integrated emergency planning approach is used, in which the Richland Operations Office (RL) retains the primary responsibility to oversee, coordinate, and assess the emergency management programs of Hanford contractors. As a result, this assessment evaluated the effectiveness of RL; the Hanford integrating contractor, Hanford Mission Integration Solutions, LLC (HMIS); and the Central Waste Complex (CWC) operating contractor, Central Plateau Cleanup Company, LLC (CPCCo) in managing and maintaining emergency response organization (ERO) performance. This assessment was conducted in accordance with the *Plan for the Independent Assessment of the 2024 Hanford Site Annual Field Exercise, April – June 2024*.

RL provides contract management, oversight, and project integration for HMIS and CPCCo. RL's Security and Emergency Services Division provides line management of site emergency management activities and oversight of contractor emergency management activities at Hanford, as stipulated in the Site's emergency management plan.

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, criteria to guide this assessment were based on selected objectives and criteria from within the following sections of criteria review and approach document (CRAD) EA CRAD 33-09, Revision 0, *DOE Order 151.1D Emergency Management Program*: 4.3 *Emergency Response Organization*, 4.4 *Emergency Operations System*, 4.7 *Emergency Categorization*, 4.8 *Protective Actions*, 4.11 *Notifications and Communications*, and 4.14 *Readiness Assurance*.

EA examined key documents, such as the exercise package, exercise evaluation guides, emergency plans, checklists, procedures, and policies. EA also interviewed key personnel responsible for developing and executing the exercise program; observed a controller/evaluator pre-exercise brief, the exercise, and the post-exercise hotwashes and debrief activities; and walked down significant portions of the CWC and the Waste Receiving and Processing (WRAP) Facility, focusing on exercise execution. 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

HMIS designed and conducted a field exercise to evaluate emergency response capabilities and multiple processes of key onsite ERO groups. Accordingly, the exercise focused on the use of appropriate plans, policies, and procedures, as well as the actions of ERO members involved in the management, direction, and command and control functions. HMIS conducted the exercise in a realistic, real-time environment using response facilities; the exercise necessitated actions by facility workers and the site-level ERO, with active participation from multiple offsite entities. HMIS initiated the exercise with a severe weather announcement. A simulated tornado caused significant damage to the WRAP Facility and the CWC, including structural damage and the breach of multiple waste containers.

In addition, the exercise postulated injuries to onsite personnel, including one fatality and a critical injury to effectuate offsite hospital participation during the exercise. HMIS simulated additional damage throughout the site including power and communication systems failures. Overall, the exercise tested key response areas, including the emergency operations system (EOS), emergency classification, protective actions (PAs), notifications, damage assessment, the identification and reporting of casualties, and integrated response decision-making among RL, HMIS, and CPCCo.

3.1 Emergency Operations System

This portion of the assessment determined whether the EOS provides centralized collection, validation, analysis, and coordination of information related to a Hanford incident response, and whether that information is used to obtain and maintain situational awareness and disseminate a common operating picture among response components to achieve a well-coordinated, well-understood, and effective response.

During the exercise, HMIS had adequate EOS capabilities to collect incident information, to provide needed expertise for incident analysis from a centralized emergency operations center (EOC), and to ensure that the EOS was consistent with the operational concepts of the National Incident Management System. However, HMIS did not effectively implement its EOS during the exercise and adequate EOS capabilities are not available outside the EOC. Contrary to DOE Order 151.1D, *Comprehensive Emergency Management System*, attachment 3, paragraph 4.b, HMIS did not demonstrate an effective EOS that obtained and maintained situational awareness and disseminated a common operating picture among response components and external partners. (See **Finding F-HMIS-1** and **OFI-HMIS-1**.) Consequently, the ERO did not fully understand the incident to provide an effective response. Although RL and HMIS documented that a compliant EOS existed, implementation of the Hanford emergency plan and emergency plan implementing procedures did not result in effective communications among response facilities, field response elements, and offsite command centers. Specifically, access to unclassified emergency response information, such as notification forms, emergency status updates, plume projections, significant activities data, casualties, facility damage, and field monitoring data, was inadequate to support an effective response.

Importantly, with regard to Hanford EOS facility-level operations, HMIS has not adequately established an integrated concept of operations that expands with the activation of the ERO, as needed, to include all ERO teams (e.g., facility-level, site-level, and offsite). Specifically, the Hanford site emergency plan, emergency plan implementing procedures, checklists, and other command media do not provide adequate planning and instructions to:

- Analyze field operations and ERO information flow dynamics, and define the critical actions to collect and disseminate key information from all response teams and venues to achieve and maintain situational awareness

- Establish an information flow structure that assigns specific responsibility for each key information set, including responsibility for verifying and validating essential incident information collected
- Require feedback loops for completing key response tasks and validating response information.

Although the Hanford emergency plan requires the ERO to develop and maintain situational awareness by providing a common operating picture among incident response components and external partners using the Web-based Emergency Operations Center software (WebEOC®), HMIS has not provided access to WebEOC and other automated information management products outside the EOC. The ERO did not acquire and consistently share an adequate understanding of the incident; this diminished situational awareness for field responders at the facility command post (FCP), incident command post (ICP), and patrol operations center (POC) and negatively impacted their level of response. The following observed ERO performance issues relating to damage assessment, identification and reporting of casualties, and response decision-making were attributed to an inadequate EOS:

Damage Assessment

- HMIS did not demonstrate an effective damage assessment process, including use of supporting tools to obtain and maintain situational awareness and provide a response priority for each building based on strategic information.
- The EOC did not provide the Building Emergency Director (BED) with a potential contamination plume path. In addition, the EOC staff did not provide projections or maps to the FCP with indications of potential wind directions.
- More than four hours into the incident, the FCP was informed that the debris field from CWC extended beyond the facility boundary, which the BED was previously unaware of.
- Current processes do not require the BED to participate in the incident commander's (IC's) status report calls with the Site Emergency Director (SED). As a result, the BED was not involved in these calls which contributed to a lack of situational awareness concerning several important aspects of the incident response, such as the status of injured personnel, results of a drone survey, the status of the fire system at Building 2404-WB, and consequence assessment results and recommendations.
- The FCP, ICP, and EOC did not effectively capture and share information on a map (e.g., the location of the various operations' section chiefs, hot zone barricades, decontamination corridor, barricades, patrol units, location of breached drums, wind direction, or the suspected plume path) so that personnel making decisions could process information visually.
- There was disagreement among field responders related to the number of ruptured containers. Two and a half hours into the incident, the IC was informed by the SED that three containers in Outside Storage Area A were breached, including one container breached in Zone 1 and two containers breached in Zone 2. The IC thought that "from three to seven containers" were breached and was not aware that the BED briefed that a total of seven containers were damaged in Outside Storage Area A.
- The IC requested plume plots from the unified dose assessment center an hour into the incident but did not receive them because the EOC staff emailed the plots but did not verify receipt with the IC.

Identification and Reporting of Casualties

- HMIS did not demonstrate an effective process to track the onsite injured personnel status, including an effective method that supported identifying, tracking, and validating injured personnel information. Importantly, HMIS did not track onsite injured personnel status in WebEOC and did not provide information on casualties in the Hanford emergency notification forms (HENFs).

- During the exercise, the IC, EOC, and FCP each had different understandings of the status of two patrolmen after a patrol vehicle was simulated to have been thrown into Outside Storage Area A at CWC. Specifically,
    - The IC correctly understood within 40 minutes that one patrolman was deceased, and the other was seriously injured.
    - Information concerning the fatality and injury was known in the EOC within 15 minutes of the EOC becoming operational. RL correctly captured in the EOC situation report (SITREP) that one injured person was transported to Lourdes Hospital and that there was one fatality. However, the two issued SITREPs incorrectly attributed the incident reclassification from Alert to Site Area Emergency (SAE) because of the fatality.
    - Personnel in the FCP incorrectly understood that there were two deceased personnel – one in the vehicle and one who died at the hospital.

Response Decision-making

- HMIS did not demonstrate effective processes for enabling access to unclassified incident information among all decision-making parties, including those at the FCP (BED), ICP (IC), EOC shift office (EOC-SO) (duty officer), POC, and EOC (SED).
- The BED and IC did not participate in any of the EOC bridge line calls conducted by the SED during the exercise, which diminished situational awareness at the FCP and ICP.
- Important incident information reported by the FCP, ICP, and the POC was not documented in WebEOC, limiting situational awareness among the ERO.
- Information logged on a whiteboard was hard for FCP personnel to read and there was no effective mechanism demonstrated for sharing information directly from the FCP to the IC or the EOC.
- Although the IC conducted periodic briefings with the SED and BED, and information at the ICP was captured on a white board, essential information was not shared effectively with responders to enable a common operating picture.
- Information provided by the FCP to the EOC was not fully disseminated, thereby limiting situational awareness of response activities.
- The IC did not clarify what portion of the site was defined as the incident scene. The IC incorrectly briefed personnel at Hanford Site Complex Command that the SED had only assumed responsibility for offsite PAs and classification. Meanwhile, the SED assumed that they were responsible for all onsite PAs "except for the incident scene" (without understanding what the incident scene was), and consequently began making PA plans for onsite workers without any coordination with the IC.

Emergency Operations System Conclusions

The HMIS EOS was consistent with the operational concepts of the National Incident Management System, and HMIS had adequate capabilities to collect incident information from centralized and well-equipped facilities. However, HMIS did not effectively implement its EOS during the exercise and adequate EOS capabilities are not available outside the EOC. In addition, HMIS has not incorporated all EOS requirements into the Hanford emergency plan and has not provided adequate direction to ensure the implementation of an effective concept of operations in the emergency plan implementing procedures. Consequently, HMIS has not provided an adequate flowdown of requirements for an effective EOS, which resulted in an unclear process for obtaining and maintaining situational awareness, and for disseminating a common operating picture among response components and external partners. Observed EOS performance

issues diminished the effectiveness of the overall emergency response, particularly related to damage assessment, the identification and reporting of casualties, and response decision-making.

3.2 Emergency Categorization/Classification

This portion of the assessment determined whether CPCCo responders correctly categorized and classified the Operational Emergency as promptly as possible, but no later than 15 minutes after identification by the predetermined decision-maker.

The CPCCo BED was the predetermined decision-maker for categorization and classification of the Operational Emergency. The BED promptly and accurately categorized and classified the incident as an Alert based on a partial collapse of a waste storage building at the WRAP Facility. Upon receiving a report of damage to multiple containers in Outside Storage Area A at CWC, the BED effectively classified an SAE for that complex. The categorization and classification of both incidents was done within 15 minutes after recognition by the BED.

The classification of both emergency incidents was done promptly and accurately by the BED using facility-specific emergency action levels (EALs); however, there were differing understandings among the Hanford ERO personnel concerning whether the SAE classification represented an upgrade or a reclassification. The BED reported the classification of the SAE as an upgrade, but the EOC disagreed and deemed it a reclassification. The HENF contained both Alert and SAE designations, which caused some confusion among offsite responders, as discussed further in section 3.4.

Emergency Categorization/Classification Conclusions

Overall, CPCCo responders promptly and accurately categorized and classified both Operational Emergencies within 15 minutes after recognition by the BED. Although the BED selected the correct EAL within the required time limit, there were differing understandings among the Hanford ERO personnel concerning whether the situation represented an upgrade or reclassification.

3.3 Protective Actions

This portion of the assessment determined whether HMIS and CPCCo responders correctly identified and implemented predetermined onsite PAs and provided predetermined offsite protective action recommendations consistent with the hazards based upon the results of emergency planning hazards assessments (EPHAs).

During the exercise, the HMIS and CPCCo responders effectively implemented the initial predetermined onsite PAs consisting of take cover for the impacted facilities and the closure of public access roads. Based on the SAE classification, HMIS was required to close onsite public access roads. The Fire Department Battalion Chief initially requested the EOC-SO Duty Officer to issue a take cover PA for all onsite personnel north of the Wye Barricade upon hearing that a tornado warning had been issued on site.

The BED appropriately classified the emergency incident as an Alert due to the partial collapse of a waste storage building at the WRAP Facility, resulting in the potential release of radioactive contamination. The CWC Facility Operations Specialist, at the direction of the BED, called the POC to request a 200 Area take cover based on a potential radiological release. The BED directed all personnel south of the WRAP Facility to remain indoors and later denied requests from those personnel to respond to the event due to the potential of being downwind, which prevented the CWC Facility Emergency Response Organization (FERO) from responding. The BED proactively contacted T-Plant, an adjacent facility outside the potential plume path, and requested the T-Plant FERO to be activated since the CWC FERO

was ordered to remain indoors. The T-Plant FERO and the Fire Department incident command were provided safe route information to a staging area outside of the potential plume path. During the exercise, the FCP provided safe route information to protect responders entering the CWC area due to the potential for contamination.

The BED then classified an incident at CWC as an SAE based on a report of heavy damage to multiple containers in Outside Storage Area A. Onsite PAs of take cover for the 200 West area remained in place and the POC initiated additional PAs outlined in RLEP 3.8, *Protective Actions*, appendix A, *200 Area Protective Actions for SAE incidents in the 200 area*, including closure of State Route 240, a public access road. In accordance with RLEP 3.8, northbound traffic on State Route 240 at Route 10 and southbound traffic on State Route 240 at State Route 24 was blocked. The EOC used the Public Highway Access Control Points Check Sheet to confirm the initial staffing of the checkpoints by Hanford Patrol followed by barricades being set up by offsite law enforcement. PAs implemented were appropriately verified by unified dose assessment center. The Consequence Assessment Director reported that protective measures were adequate during the EOC briefings.

HMIS and CPCCo responders promptly identified and implemented predetermined PAs. However, HMIS and CPCCo responders did not define clear boundaries and areas of responsibility for ongoing PAs among the IC, BED, and SED, as discussed above in section 3.1.

Protective Actions Conclusions

During the exercise, the HMIS and CPCCo responders effectively implemented the initial predetermined onsite PAs, consisting of take cover for the impacted facility and the closure of public access roads. However, HMIS and CPCCo responders did not define clear boundaries and areas of responsibility for ongoing PAs among the IC, BED, and SED, which consequently resulted in the EOC developing PA plans for onsite workers without any coordination with the IC.

3.4 Notifications and Communications

This portion of the assessment determined whether HMIS performed notifications promptly, accurately, and effectively, and whether the ERO maintained effective communications throughout the response. Affected employees must be notified of PA decisions no later than 10 minutes after the PAs have been identified; local, state, Tribal, and Federal authorities must be notified of classified Operational Emergencies within 15 minutes of categorization.

3.4.1 Notifications

HMIS adequately completed required worker notifications for the tornado, promptly directing workers north of the Wye Barricade to take cover within three minutes of receiving a warning. Sirens were sounded in the 200 West area by the EOC-SO and heard by exercise participants. The Hanford Fire Department dispatch center dispatched the fire department and appropriately provided an incident description and meteorological information to first responders. The POC appropriately dispatched Hanford Patrol.

In addition, HMIS quickly issued worker PAs for each of the declared emergencies, well within the 10-minute required time limit. After being informed of the Building 2404-WB roof collapse, the BED declared an Alert emergency and directed the ICP communicator to complete the notification process. Public address speakers, sirens, and a mass notification system called AtHoc, which delivers computer emergency messages as well as telephone messages via voice and text, were all used to notify site employees of emergency declarations during the exercise. An AM radio station is also available for

worker notifications, but the station message was not updated due to exercise planner concerns that the public might not understand that the emergency was simulated. (See **OFI-HMIS-2**.) Within six minutes of the Alert declaration, the EOC-SO appropriately sent an activation message via AtHoc directing EOC responders to report to their duty stations.

Notifications to offsite stakeholders and DOE Headquarters were completed within 15 minutes of emergency categorization as required. Following the Alert declaration, the EOC-SO Duty Officer promptly approved the HENF for the CPCCo BED, and then completed DOE crash phone notifications and DOE Headquarters verbal notifications. After confirmation that waste containers in Outside Storage Area A were breached, the CPCCo BED quickly approved the HENF for the SAE declaration, after which the EOC-SO appropriately completed all verbal notifications. Additionally, three HENF updates were approved by the SED in the EOC, two of which were issued to offsite stakeholders; the exercise ended before the EOC's third update could be issued. Redundant systems were used to ensure notification of offsite partners of the two emergency declarations. Hanford's emergency information website, which could be accessed by both onsite workers and the public, was updated appropriately by EOC staff with information about the two emergencies, and the DOE crash phone system was used effectively to ensure that offsite stakeholders received simultaneous verbal notifications for emergency declarations and updates. When the exercise concluded, HMIS appropriately completed the termination notification.

While HMIS effectively used dedicated and redundant systems to ensure that all required onsite and offsite notifications were issued in a timely manner, the HENF used for offsite notifications did not include all required information, including information about PAs implemented, damage, potential and actual impacts, casualties, agencies involved, and the level of public and media interest. In addition, all four HENFs, as well as the two EOC SITREPs transmitted to the DOE-HQ program office and RL/Office of River Protection, contained errors. As a result, contrary to DOE Order 151.1D, attachment 3, paragraph 11, HMIS did not provide accurate and complete initial and follow-on notifications to all offsite stakeholders. (See **Finding F-HMIS-2**.) Consequently, offsite agencies did not have situational awareness or a common operating picture about the significance and extent of the incident.

The notification process is prone to error because it involves information passing through multiple personnel positions before the HENF is filled out, with information passing verbally from the BED to the ICP Communicator, and finally to the EOC-SO Duty Officer before the form is completed. Examples of significant HENF and SITREP information that was either omitted or in error are provided below:

- HMIS did not include the fatality and critical injury information on the second, third, and fourth HENFs, even though the information was known within 40 minutes of the incident.
- The initial HENF indicated that an airborne release occurred, but the remaining three indicated that a spill occurred without an associated airborne release. CPCCo's ICP Communicator told the EOC-SO Duty Officer to indicate on the initial HENF that a hazardous airborne release had been confirmed, even though the BED did not state that a release was confirmed.
- The second HENF indicated that the prognosis for the situation was stable. However, the first, third, and fourth HENFs indicated that the prognosis was unknown.
- CPCCo and HMIS did not state on any of the HENFs that onsite personnel implemented take cover PAs due to the tornado and subsequent radiological releases.
- Facility damage information was not included on all of the HENFs. The initial HENF simply stated that a tornado caused a potential degradation of safety to storage facilities even though significant facility damage to the 2404-WB storage building was known.
- No meteorological data were provided on the first and second HENFs.

- Although the CPCCo BED provided the correct EAL number for the SAE, the second, third, and fourth HENFs did not include this number.
- Both SITREPs inaccurately stated that the site declared an SAE because of a fatality.
- The first HENF was approved by the EOC-SO Duty Officer for the BED, and the second HENF stated that the form was approved by the BED; however, neither the BED nor the ICP Communicator verified the information before the forms were issued. The notification process does not allow for visual review and verification of the HENF by the BED who made the emergency declaration. (See **OFI-HMIS-3**.)

While the EOC-SO followed the steps for completing the HENF per HNF-IP-0858, *HMIS Emergency Response Duties for EOC Emergency Checklists*, including the steps for a multi-facility event, the process defined in the checklist was not understood by one offsite stakeholder. For a multi-facility event involving multiple emergency declarations, the procedure directs the Duty Officer to select "Reclassification" on the HENF and then place a check mark next to all classification levels that apply. During the exercise, the Benton County representative in the EOC did not understand why the classification levels marked on multiple HENFs indicated that the site was simultaneously at both an Alert and SAE classification level. (See **OFI-HMIS-3**.)

Finally, some procedural steps in the notification process were not followed by CPCCo for the second HENF when the SAE was declared. Section 3.8 of RLEP 1.1, *ICP Communicator – Checklist Duties*, directs the ICP Communicator to call the POC, state that an emergency is being declared, and then request a bridge call with the EOC-SO. Following the bridge request, the ICP Communicator is to wait for the POC to initiate the conference bridge and follow the EOC Shift Officer's instructions to complete the notification. However, the CWC ICP Communicator called the EOC-SO directly to make the SAE notification and did not request a bridge call with the EOC-SO. The POC was not informed of the SAE declaration during the call; however, upon realizing that the POC was not on the call, the EOC-SO appropriately made notification to the POC when the call concluded.

3.4.2 Communications

HMIS has adequate communications capabilities and maintain plans, procedures, and several systems to facilitate effective communications among ERO response elements, including radio, telephones, WebEOC, and EsriGIS mapping software. During the exercise, CWC responders demonstrated good operational discipline and consistently maintained rigorous three-way radio and telephone communications (i.e., repeat backs). The IC periodically briefed the SED, BED, EOC-SO Duty Officer, and battalion chiefs, who directed responder operations at multiple incident scenes. In addition, despite communication system limitations and impairments caused by the severe event (e.g., repeated cell-phone communication failures and loss of power at the FCP, as designed by exercise planners), the IC processed a large amount of information from multiple sources by moving responders to different radio channels, communicating succinctly, and making decisions rapidly. However, as discussed above in section 3.1, due to an inadequate concept of operations, HMIS did not ensure effective communications among response organizations throughout the emergency. As a result, emergency responders did not have situational awareness or a common operating picture. Most significantly, the BED was unaware of key response information, including the location of Hanford Complex Command and casualty information.

Notifications and Communications Conclusions

Overall, HMIS has adequate processes and systems for notifications and communications but did not always execute them effectively. HMIS and CPCCo issued timely notifications to workers, offsite stakeholders, and DOE Headquarters, and conducted multiple intra-facility briefings. However, HMIS

did not provide all required information to offsite stakeholders, including PAs implemented, damage, potential and actual impacts, casualties, agencies involved, and the level of public and media interest. Further, ineffective communications affected situational awareness and resulted in an overall lack of a common operating picture.

3.5 Exercise Design and Conduct

This portion of the assessment evaluated the ability of RL and HMIS to conduct an exercise that validated emergency response capabilities and tested the implementation of emergency plans and procedures for hazards identified in the EPHAs.

RL and HMIS appropriately designed and conducted the annual exercise to adequately test selected response functions for a severe event and validate associated plans and procedures. The exercise was challenging and fulfilled the response elements and capabilities as defined in the 5-year exercise plan. Adequate scenarios from the EPHAs for both the WRAP Facility and CWC were selected for testing, and the objectives and criteria evaluated during the exercise were comprehensive and appropriately focused on evaluating program effectiveness versus compliance. Commendably, the exercise tested processes that had not been demonstrated previously at Hanford, including the process for decontamination of weapons and the handling of a contaminated and deceased worker. Props and pictures were developed and used to promote realism and help players understand the magnitude of tornado damage. Pictures of simulated tornado damage were provided to players, all of which appeared realistic. An old vehicle was brought onto the site to allow the Fire Department to use extrication equipment, and a water-gong recording was used to indicate a water leak. In addition, DOE Argonne's Exercise Training Network participated and provided realistic media simulation, which challenged ERO members tasked with providing emergency public information.

HMIS conducted a thorough pre-exercise safety briefing and effectively managed the execution of the exercise. Although several exercise control issues were noted, all were self-identified by HMIS, and the overall performance of the controller/evaluator organization during the exercise was adequate. Following the exercise, controller and player hotwashes were thorough and critical of performance.

One exercise design decision negatively impacted performance. An EOC Liaison position was not filled because all persons capable of filling the role were assigned as controllers and evaluators. Filling this position could have significantly helped promote a common operating picture. (See **OFI-HMIS-4**.) HMIS stated that the decision not to fill the position was deliberate and deemed necessary to manage a complex exercise scenario.

Exercise Design and Conduct Conclusions

Overall, RL and HMIS effectively designed and conducted an exercise that validated emergency response capabilities for a severe event and tested and validated emergency plans and procedures for hazards identified in EPHAs. However, HMIS left the EOC Liaison position unfilled, limiting the ERO's ability to disseminate situational awareness and promote a common operating picture among all responders.

4.0 BEST PRACTICES

No best practices were identified during this assessment.

5.0 FINDINGS

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

Hanford Mission Integration Solutions, LLC

Finding F-HMIS-1: During the exercise, HMIS did not demonstrate an effective EOS that obtained and maintained situational awareness and disseminated a common operating picture among response components and external partners. (DOE Order 151.1D, att. 3, par. 4.b)

Finding F-HMIS-2: HMIS did not provide accurate and complete initial and follow-on notifications to all offsite stakeholders. (DOE Order 151.1D, att. 3, par. 11)

6.0 DEFICIENCIES

No deficiencies were identified during this assessment.

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.

Hanford Mission Integration Solutions, LLC

OFI-HMIS-1: Consider improving situational awareness and common operating picture weaknesses by strengthening site-specific emergency plans, emergency plan implementing procedures, checklists, and other command media by adding and implementing requirements for:

- Analyzing the field operations and ERO information flow dynamics to define the critical paths of key information and to identify expected actions for achieving and maintaining situational awareness among all teams.
- Adapting an information flow structure that assigns specific responsibility for each key information set, including responsibility for verifying and validating essential incident information collected in defined information systems or other response records.
- Establishing feedback loops to the issuing decision-maker for key task completion.
- Incorporating guidance on the use of information management tools and resources to flow down requirements into the emergency plan, implementing procedures, and response checklists.

- Integrating incident management tools with other web-based geographical information systems to provide ERO personnel with views, data, and analysis tools for the site, the surrounding area, and interiors of many onsite buildings.

OFI-HMIS-2: Consider testing the capability of responders to change AM radio station messages during exercises by allowing players to update the station message with an exercise-related message, such as "This is a test of the Hanford emergency alerting system. During an actual emergency, specific protective action and emergency response instructions would be provided to listeners."

OFI-HMIS-3: Consider improving the accuracy of HENFs by:

- Ensuring that the HENF contains all information required by DOE Order 151.1D, attachment 3, paragraph 11.a.(6).
- Designing an electronic HENF that can be viewed by BEDs and the EOC-SO simultaneously so that the BED can review the initial emergency information being disseminated and verify its accuracy.
- Increasing ERO proficiency and rigor in notification form review and approval to ensure that the information in the forms is accurate before sending them to offsite agencies.
- Revising the HENF process for multiple releases to only require marking the site's highest level of classification at the top of the form and then denoting all applicable EALs elsewhere on the form, such as in the event description.
- Emphasizing to ERO staff members who prepare or approve HENFs during training, drills, and exercises the rigor that is required during completion of the HENF.
- Providing additional training to offsite stakeholders on the HENF process for severe events that trigger multiple EALs at multiple facilities.

OFI-HMIS-4: Consider training additional people for the EOC Liaison position to help ensure that the position can be staffed during exercises.

8.0 ITEMS FOR FOLLOW-UP

EA identified several significant weaknesses in the readiness of response capabilities that were not previously identified by the HMIS contractor assurance system, RL oversight, or Program Secretarial Office oversight. As such, EA plans to conduct a follow-up assessment (programmatic and exercise performance evaluation) during fiscal years 2025/2026.

Appendix A
Supplemental Information

Dates of Assessment

April 1 to June 17, 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
Thomas E. Sowinski, Director, Office of Nuclear Safety and Environmental Assessments
Kimberly G. Nelson, Director, Office of Worker Safety and Health Assessments
Jack E. Winston, Director, Office of Emergency Management Assessments
Brent L. Jones, Director, Office of Nuclear Engineering and Safety Basis Assessments

Quality Review Board

William F. West, Advisor
Kevin G. Kilp, Chair
Christopher E. McFearin
Jacob M. Miller
William A. Eckroade

EA Assessment Team

Dr. Wade W. Gough, Lead
Yuri V. Graves
John D. Bolling
Robert F. Gee
John L. Riley