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DOE O 151.1D Emergency Management Program Criteria and Review Approach Document		
Authorization and Approval	Gerald M. McAteer Director, Office of Emergency Management Assessments EA-33 Date: April 4, 2019	Lead, Randy L. Griffin Emergency Management Specialist EA-33 Date: April 4, 2019

1.0 PURPOSE

The mission of the U.S. Department of Energy (DOE) Office of Environment, Safety and Health Assessments (EA-30) is to assess the effectiveness of safety and emergency management systems and practices used by line and contractor organizations and to provide clear, concise, rigorous, and independent evaluation reports of performance in protecting workers, the public, and the environment from the hazards associated with DOE activities.

In addition to the general independent oversight requirements and responsibilities specified in DOE Order 227.1A, *Independent Oversight Program*, this criteria and review approach document (CRAD), in part, fulfills the responsibility assigned to EA in (reference source document) to (paraphrase responsibility or requirement).

The CRADs are available to DOE line and contractor assessment personnel to aid them in developing effective DOE oversight, contractor self-assessment, and corrective action processes. The current revision of EA's CRADs are available at http://www.energy.gov/ea/criteria-and-review-approach-documents.

2.0 APPLICABILITY

The following CRAD is approved for use by the Office of Emergency Management Assessments.

3.0 FEEDBACK

Comments and suggestions for improvements on this CRAD can be directed to the Director, Office of Environment, Safety and Health Assessments.

4.0 CRITERIA AND REVIEW APPROACH

The Emergency Management Program assessment will evaluate the effectiveness of emergency management programs at the site's hazardous material facilities and the associated field office oversight methodology. The assessment will evaluate the effectiveness of the plans, procedures, and processes that establish the emergency management program, as well as an evaluation of emergency management program implementation and oversight. Review of implementation at a site may include any or all of the following activities:

- Observing and evaluating performance demonstrations, including for example exercises and limited-scope performance tests (LSPTs).
- Independently reviewing emergency management program implementation.
- Reviewing documentation of completed self-assessment activities.
- Evaluating the effectiveness of corrective actions derived from exercises, self-assessments, and external assessments.
- Shadowing or observation of contractor and/or field office personnel during conduct of a self-assessment/assessment activity.

While an emergency management program assessment may include both compliance and performance activities, a greater emphasis is placed on performance, as it is more useful in determining whether the emergency response organization can perform its mission. Many of the DOE emergency management requirements contained in DOE O 151.1D are stated as capabilities, which are most effectively verified and validated during a performance demonstration; that is, the capability, duty, or integrated response must be performed and therefore, compliance requires effective performance. Virtually any emergency response position or response element can be tested using performance tests; such as, exercises, LSPTs, and tabletop performance demonstrations.

The scope of the assessment activities at each site will be guided by the overall objectives of the assessment plan for emergency management program activities, and the assessment criteria, activities, and lines of inquiry are, therefore, intended to be tailored to the site-specific assessment objectives in the assessment plan.

The functional areas in Table 1 are designed as stand-alone sections to be used in any combination based on the needs of the specific assessment. They provide the objectives, criteria, activities, and lines of inquiry that will be used to conduct the review.

Table 1 - CRAD Functional Areas

Section Number	Functional Area
4.1	Program Administration
4.2	All Hazards Planning
4.3	Emergency Response Organization
4.4	Emergency Operations System
4.5	Training and Drills
4.6	Offsite Response Interface
4.7	Emergency Categorization
4.8	Protective Actions
4.9	Consequence Assessment
4.10	Emergency Facilities and Equipment/Systems
4.11	Notifications and Communications
4.12	Emergency Public Information
4.13	Termination and Recovery
4.14	Readiness Assurance
4.15	Exercises

4.1 Program Administration

OBJECTIVES

PA.1: Each DOE site, facility, and activity must establish and maintain an emergency management program that complies with the Emergency Management Core Program requirements. (DOE Order 151.1D, Attachment 3, Introduction)

PA.2: Program administration and management must be established to provide effective organizational management and administrative control of the site/facility/activity emergency management program by establishing and maintaining authorities and resources necessary to plan,

develop, implement, and maintain a viable, integrated, and coordinated Comprehensive Emergency Management System. (DOE Order 151.1D, Attachment 3, Paragraph 1)

CRITERIA

1. *DOE Federal and contractor managers responsible for DOE sites/facilities/ activities must designate an individual to administer the emergency management program. (Note: See additional responsibilities for the individual.) This individual must ensure the emergency management program addresses the elements of the Emergency Management Core Program.* (DOE Order 151.1D, Attachment 3, Paragraph 1.a)
2. *DOE Federal and contractor managers responsible for DOE sites/facilities/ activities must, in addition to the requirements of the Emergency Management Core Program, implement the emergency management program requirements contained in Attachments 4, 5, and 6 of this Order for those sites/facilities/activities to which they apply.* (DOE Order 151.1D, Attachment 3, Paragraph 1.b)
3. *DOE Federal and contractor managers responsible for DOE sites/facilities/activities must develop and maintain an all-hazards emergency management plan.* (DOE Order 151.1D, Attachment 3, Paragraph 1.c)
4. *DOE Federal and contractor managers responsible for DOE sites/facilities/activities must develop and maintain procedures that describe how the emergency management plan must be implemented and maintained.* (DOE Order 151.1D, Attachment 3, Paragraph 1.d)

Performance

<u>During a performance demonstration</u> –

- Are the effectiveness, completeness, correctness, and integration of emergency plan implementing procedures (EPIPs) (as well as supporting forms and operator aids, for example) demonstrated?
- Are roles and responsibilities in Memoranda of Agreement (MOAs)/ Memoranda of Understanding (MOUs) effectively demonstrated?
- Are emergency management documents controlled, available and current? (DOE O 151.1D, Attachment 3, Paragraph 1.e)
- Are current copies of response plans, implementing procedures, work instructions, checklists, job aids, and emergency response equipment readily available at the appropriate emergency response organization (ERO) positions?
- Is a formal document control system implemented to record, sequence, validate and track the flow and chronology of information? Are vital records captured and recorded?
- Have schedules (e.g., documentation submittals, reviews, and approvals; preparedness and readiness assurance activities) been established and enforced to ensure that program planning, preparedness, and readiness assurance activities are completed in a timely and efficient manner?
- Are sufficient personnel and equipment employed to support an effective emergency response?

Programmatic Lines of Inquiry (LOIs)

<u>Program Administration</u>

- Has the site/facility/activity designated an individual (the Program Administrator) to administer the day-to-day operation and maintenance of the emergency management program? (DOE O 151.1D, Attachment 3, Paragraph 1.a.(1))

- Does the program administrator have access to management personnel with the authority for site/facility/activity-level resources and operations? (DOE O 151.1D, Attachment 3, Paragraph 1.a.(2))
- Does the program administrator brief senior leadership on the program and their expected roles and responsibilities during an emergency (initial and when changes occur)? (DOE O 151.1D, Attachment 3, Paragraph 1.a.(3))
- Does the program administrator ensure emergency planning is integrated with other applicable programs ((e.g., Baseline Needs Assessment, Site Security Plan, Cybersecurity Plan, and Continuity of Operations Plan, Documented Safety Analysis, Threat and Hazard Identification and Risk Assessment Guide)? (DOE O 151.1D, Attachment 3, Paragraph 1.a.(4))
- Does the program administrator oversee implementation of the emergency management plan per the Order? (DOE O 151.1D, Attachment 3, Paragraph 1.a.(5))
- Does the program administrator approve and/or concur on planning documents addressing the program elements for an Emergency Management Core Program? (DOE O 151.1D, Attachment 3, Paragraph 1.a.(6))
- Are site/facility/activity roles and responsibilities for program administration clearly defined?
- Is effective organizational management and administrative control of the facility emergency management program provided by establishing and maintaining authorities and resources necessary to plan, develop, implement and maintain a viable, integrated, and coordinated comprehensive emergency management program?
- At a multiple-facility site, has the program administrator provided review and oversight of the facility emergency management (EM) programs?
- Are facility emergency management programs on site consistent and integrated for site-wide consistency?
- At a multiple facility site, has the program administrator provided guidance to ensure an effective, integrated site program is achieved when the facility capabilities are activated for a response?
- Do Federal and contractor managers ensure emergency plans and procedures are developed, verified, validated, reviewed periodically, updated as necessary, and that the program receives an appropriate level of oversight
- Have administration of planning, preparedness, and readiness assurance activities been established and effectively maintained?
    - Have reasonable schedules (e.g., documentation submittals, reviews, and approvals; preparedness and readiness assurance activities) been established and enforced to ensure that program planning, preparedness, and readiness assurance activities are initiated, completed, and repeated in a timely and efficient manner?
    - Does this program administrator administer and maintain the emergency plan, develop Emergency Readiness Assurance Plan (ERAP) and annual updates, develop and conduct training and exercise programs, coordinate assessment activities, develop related documentation, and coordinate emergency resources?
    - Has the program administrator ensured that sufficient personnel (resources) are identified and assigned to support an effective emergency response?
- Have emergency plans and procedures and related supporting documentation been developed (and maintained) for the site, facilities, and activities?
- Is the emergency planning and response organization staffed sufficiently to perform its assigned duties?
- Have formal review and approval processes been established and documented to ensure that the planning and development of components of the emergency management program (e.g., planning analyses, plans and procedures, supporting documentation) receive sufficient oversight by staff, management and DOE elements to ensure consistency, correctness, and completeness?

Emergency Management Core Program

- Has an emergency plan been developed? (DOE O 151.1D, Attachment 3, Paragraph 1.c)
- Does the emergency plan contain the recommended content of (DOE G 151.1-3X, Appendix A)?
- Does the emergency plan address the elements of the Emergency Management Core Program? (DOE O 151.1D, Attachment 3, Paragraph 1.a.(7))
  - Does the emergency plan document the emergency management program, describe how the emergency plan will be implemented; and clearly state roles, responsibilities, and requirements associated with program administration, EROs, individual positions, operations, and interfaces?
  - Has the designated Program Administrator ensured the development and maintenance of the All-Hazards Survey, and, as needed, the Emergency Planning Hazards Assessment?
    - Has the site/facility prepared and submitted the following to the Cognizant Field Element manager for approval: HS, Emergency Planning Hazards Assessment (EPHAs), documentation to establish an Emergency Planning Zone, Emergency Plans that document comprehensive emergency management programs, and ERAPs?
    - Are current reviewed and approved Hazards Surveys and EPHAs available?
  - Does the plan establish an ERO and Emergency Operations System (EOS); describing a complete concept of operations for emergency response at the site/facility/activity?
    - Does the emergency plan adequately address an integrated response to facility events that may escalate into sitewide events?
    - Does the emergency plan clearly delineate the chain of command in an emergency?
    - Does the Emergency Plan include: procedures for reporting fire or other emergencies; emergency evacuation, including type of evacuation and exit route assignments; procedures to account for all employees after evacuation; and procedures to be followed by employees performing rescue or medical duties?
    - At sites with multiple contractors, are the emergency plans effectively integrated with roles and responsibilities clearly defined?
  - Is a training and drill program described established in an appropriate, formal training plan, and implemented?
  - Are provisions for emergency medical support addressed?
  - Does the site have adequate interfaces with offsite authorities for planning and emergency response?
    - Is development and approval of supporting documentation (e.g., MOUs, MOAs, etc.) accomplished?
  - Does the emergency plan describe the provisions for response to an Operational Emergency (OE)?
  - Does the plan describe the consequence assessment processes and personnel that will be used to support an emergency response?
  - Does the emergency plan describe a systematic approach to the identification and implementation of worker protective actions?
  - Are facilities and equipment necessary to support an effective response identified and their key functions and capabilities described?
  - Does the plan describe the methods and procedures for notifications and communications?
    - Does the plan include a systematic process to prepare and deliver the required notifications, particularly those dealing with protective actions?
    - Does the plan describe the communications systems being used to provide the notifications to workers, offsite authorities, and DOE Headquarters personnel, for example?
    - Does the plan address the ability of the notification and communications systems to meet the timely requirements of the Order?
  - Is an emergency public information program established? Described in a separate plan?

    - Does the emergency plan address the approach that will be taken to determine when an event can be terminated and the transition to recovery?
    - Is an exercise program designed and developed to test the emergency response capabilities?
    - Is a readiness assurance program to identify and correct program weaknesses established?
        - Does the program implement and document evaluations (self-assessments and exercises)?
        - Are identified weaknesses systematically addressed and corrected?
- Is the emergency plan reviewed (and documented) annually, updated when appropriate, and approved no less than every three years? (DOE O 151.1D, Attachment 3, Paragraph 1.c.(1))
- Is the emergency plan updated when there are significant changes to the program plan? (DOE O 151.1D, Attachment 3, Paragraph 1.c.(2))
- Is the emergency plan submitted to the Field Element Manager or appropriate Federal Manager for approval? (DOE O 151.1D, Attachment 3, Paragraph 1.c.(3))
- Is there a controlled document system for the emergency management plan and related procedures and documentation? (DOE O 151.1D, Attachment 3, Paragraph 1.e)
    - Does the document control system meet industry standards for document review, approval, distribution, and change control?
    - Is a formal document control system implemented during an emergency to record, sequence, validate and track the flow and chronology of information?
- Is there a process for review, approval, and distribution of the emergency management plan and related procedures and documentation? (DOE O 151.1D, Attachment 3, Paragraph 1.f)
- Does the site/facility/activity have agreements in place for the transport, acceptance, and treatment of potentially contaminated injured personnel, as applicable? (DOE O 151.1D, Attachment 3, Paragraph 1.g)
    - Is development and approval of supporting documentation (e.g., MOUs, MOAs, etc.) accomplished?
    - Are periodic reviews and revisions to maintain these documents up-to-date scheduled and conducted?
- Does the plan address interoperability, integration, and interface with jurisdictional responders for severe incidents with regional impacts? (DOE O 151.1D, Attachment 3, Paragraph 1.h)
- Have provisions been made to review documents for classified and controlled unclassified information? (DOE O 151.1D, Attachment 3, Paragraph 1.i)
- Does the plan identify and provide for the maintenance of operating vital records? (DOE O 151.1D, Attachment 3, Paragraph 1.j)
- Has the contractor established a program to ensure that vital records, regardless of media, essential to the continued functioning or reconstitution of an organization during and after an emergency, are available? (DOE O 151.1D, Attachment 3, Paragraph 1.j; DOE O 243.1B; and 36 CFR 1236)?

<u>Emergency Management Hazardous Material Program</u>

- Have EPHAs been prepared and used to define the provisions of the emergency management program such that the program is commensurate with the identified hazards?
- Is the facility emergency response plan consistent with the requirements of the Documented Safety Analyses (DSA) or Basis for Interim Operation (BIO)?
- Has the training and drill program been expanded (from the Core Program requirements) to address the additional capabilities to respond to the hazardous materials present (based on the EPHA results)?
- If the site includes Defense Nuclear Facilities (DNFs), are the emergency management drills integrated with the operations drills?
- Do the emergency plan and implementing procedures address coordination (of planning and response) with the appropriate local, state, tribal, and Federal organizations?

- Does the program include provisions to classify events involving actual or potential airborne release of hazardous materials?
- Does the program provide for predetermined onsite protective actions and offsite protective action recommendations?
- Does the program include timely assessment of the consequences of hazardous material releases?
- Are the facilities and equipment (e.g., Emergency Operations Center (EOC), Alternate Emergency Operations Center (AEOC), Joint Information Center (JIC), and communications and meteorological equipment) necessary to respond to a hazardous material release established and maintained?
- Do DNFs have provisions for operability and habitability of emergency response facilities and safe shutdown strategies for facilities during an emergency?
- Does the emergency plan contain provisions for the timely notification of local, state, tribal, and Federal authorities of classified emergencies?
- Does the Emergency Public Information (EPI) plan address the additional response capabilities associated with hazardous material releases offsite?
- Does the program include a site-level exercise program to validate its emergency response capabilities?

Emergency Plan Implementing Procedures (EPIPs)

- Has the contractor developed emergency plan implementing procedures to describe how emergency plans must be implemented?
- Do emergency plan implementing procedures accurately implement the emergency plan and clearly state roles, responsibilities, and actions associated with program administration, EROs, individual positions, operations, and interfaces?
- Has the site/facility/activity prepared and maintained emergency procedures that address emergency classification, protective actions, notification, reporting, response actions, training and drills, exercises, emergency public information, outreach and coordination, accident investigation, and applicable Federal statues, State and local laws, DOE Orders, and implementing regulations and guidance?
- Are the procedures consistent with the emergency plan?
- Are emergency plan implementing procedures developed, verified, validated, periodically reviewed, and updated as necessary?
- Are emergency management plans/procedures developed for facilities to appropriately address the Core Program requirements? The Hazardous Materials Program requirements?
- Do emergency management plans/procedures developed for facilities requiring a Hazardous Materials Program seamlessly integrate with Core Program requirements?
- Do emergency management plans/procedures developed for facilities requiring a Hazardous Materials Program seamlessly integrate with site-level response procedures?
- Are facility emergency management programs on site integrated for site-wide consistency?
- Have procedures been developed for all critical facility emergency response functions?
- Have facility-level procedures been fully integrated with those of the site-wide emergency management program?
- Do facility-specific procedures provide clear instructions for the local response to all postulated building emergencies for the facility and emergencies that might originate in adjacent facilities?
- Have facility emergency response procedures been coordinated and integrated as appropriate with those of the site fire department (e.g., rapid entry into the protected area)?
- Do procedures address offsite responder access (for example, mutual aid) to site and nuclear facilities?

- Do procedures and job aids for event categorization/classification, notification, and protective action decision-making provide consistent, detailed instructions that can be effectively used at the site/facility level in response to an event?
- Do procedures identify available mechanisms and thresholds that permit prompt categorization and classification of all events that may affect the facility and the site?
- Are protective actions such as evacuation and sheltering clearly identified and capable of being implemented as specified?
- Has a mechanism for performing personnel accountability been established?
- Is equipment shutdown and securing of facilities/materials addressed in procedures and able to be readily implemented?
- Have clear lines of communication been established for use during an emergency?
- Do procedures and processes provide for accurate, timely notice of off-normal events to response organizations, facility personnel, and co-located workers and facilities?
- Are mechanisms (including warning systems) available to promptly determine and implement protective actions for responders, facility, and site personnel?
- Do procedures provide for planning and coordinating re-entry activities to ensure worker safety?
- Do emergency response plans, MOUs and/or MOAs, and procedures address response to beyond design basis events (BDBEs) (including natural phenomena events) that could have site-wide impacts or impacts on regional support infrastructure.
- Are biosafety facility incident response plans integrated with the site-wide emergency management program?
- For biosafety facilities, is the designated Responsible Official also the facility emergency management program administrator, who is responsible for implementing and maintaining the emergency management program? Is this designated administrator/official responsible for tasks that involve compliance with the requirements for the Select Agent rule(s) [i.e., Dept. of Health and Human Services (HSS) regulation 42 CFR 73 and Department of Agriculture (USDA) regulations 7 CFR 331 and 9 CFR 121] and with existing DOE/ National Nuclear Security Administration (NNSA) emergency management policy as expressed in DOE O 151.1D?
- At sites with multiple contractors, are formal agreements in place that delineate roles and responsibilities of contractors (e.g., lead and subordinate)?
- At sites with multiple contractors, is there a formal forum established that meets periodically to coordinate/integrate activities and resolve cross cutting emergency management issues?

Good Practice

- None.

REVIEW APPROACH

Record Review:
- For the selected facilities, review the site/facility/activity emergency plans, implementing procedures, checklists, and job aids, if applicable.
- Review the site/facility's operating procedures; including normal, abnormal and emergency procedures.
- Review facility/building emergency plans/protocols and procedures; including normal, alarm response, abnormal, and emergency procedures.
- Review the EPHAs, DSAs, and other relevant safety documentation.
- Review the facility's emergency action levels.

- Review site/facility/activity procedures governing identification of Protective Actions (PAs) and notification of personnel (onsite and offsite) of the PAs.
- Review site/facility/activity procedures governing evacuation, shelter-in-place, and accountability.
- Review the site/facility operational and emergency management/response organization charts.
- Review document approval/revision dates.
- Review, at multi-contractor sites, contractor emergency management agreements

Interviews:
- Emergency management program manager(s).
- Facility managers.
- Emergency management staff.
- Operators.
- Site/facility responders.
- Document control staff.

Observations:
Selectively walk down site/facility/activity, as necessary.

4.2 All Hazards Planning Basis

OBJECTIVES

AHPB.1: An All-Hazards Survey must be performed by DOE Federal and contractor staff responsible for DOE sites/facilities/activities. Its purpose is to identify all hazards that are applicable to the operation of that entity and establishes the planning basis for the emergency management program. Each All-Hazards Survey may cover single or multiple facilities or activities, or one All-Hazards Survey may cover an entire site. (DOE Order 151.1D, Attachment 3, Paragraph 2)

AHPB.2: An EPHA must be prepared and used to define the provisions of the Emergency Management Hazardous Materials Program, ensuring that the program is commensurate with the hazards identified. The EPHA provides the basis for establishing a graded approach that will meet the program requirements outlined in this Attachment. DOE sites/facilities/activities with Federally regulated biological agents and toxins require an EPHA, however, quantitative analysis is not required. (DOE Order 151.1D, Attachment 4, Paragraph 2)

CRITERIA

1. *An All-Hazards Survey must be performed by DOE Federal and contractor staff responsible for DOE sites/facilities/activities.* (DOE Order 151.1D, Attachment 3, Paragraph 2)
2. *Each All-Hazards Survey must: a. Describe the applicable potential health, safety, or environmental impacts; b. Identify the need for development of further planning and preparedness beyond the Emergency Management Core Program requirements that will apply to each type of hazard; and c. Be submitted for approval to the Field Element Manager or appropriate Federal Manager; and be updated every three years from date of issuance, and when there are significant changes to site/facility/activity operations or to hazardous material inventories.* (DOE Order 151.1D, Attachment 3, Paragraph 2.a, b, & c)
3. *The All-Hazards Survey must address the following: Natural hazards, technological hazards, and human-caused hazards.* (DOE Order 151.1D, Attachment 3, Paragraph 2.d.(1))

4. *The All-Hazards Survey must include conducting a Threat and Hazard Identification and Risk Assessment (THIRA) in accordance with the Department of Homeland Security, Comprehensive Preparedness Guide (CPG) 201, Threat and Hazard Identification and Risk Assessment Guide.* (DOE Order 151.1D, Attachment 3, Paragraph 2.d.(2))
5. *The hazardous material screening process must identify specific hazardous materials and quantities that, if released, could produce impacts consistent with the definition of an Operational Emergency. The potential release of these materials to the environment requires further analysis in an EPHA. The release of hazardous materials less than the quantities listed below does not require quantitative analysis in an EPHA. Categories to be considered under the All-Hazards Survey (as described in 2.d.(1)) include sites/facilities/activities with radiological materials, hazardous biological agents and toxins, and hazardous chemicals.* (DOE Order 151.1D, Attachment 3, Paragraph 2.e)
6. *All hazardous materials (i.e., radiological, biological agent/toxin, chemical, and explosive) at a DOE site must be considered in the screening.* (DOE Order 151.1D, Attachment 3, Paragraph 2.e.(1))
7. *If the hazardous material at a site/facility/activity screens out by quantity or by exclusion from the screening – as described in paragraphs 2.e.(3) through 2.e.(7) – response plans must still be developed in accordance with paragraph 2.e.(2) below to address smaller scale incidents and emergencies.* (DOE Order 151.1D, Attachment 3, Paragraph 2.e.(1)(a))
8. *If the hazardous material at a site/facility/activity does not screen out, and is not covered by the exclusions below, an Emergency Planning Hazards Assessment (EPHA) must be conducted.* (DOE Order 151.1D, Attachment 3, Paragraph 2.e.(1)(b))
9. *Each hazardous material container and its associated process must be evaluated separately, unless one of the following conditions exists, in which case the total quantity of the hazardous material must be used when determining if it exceeds the applicable screening threshold: (a) Container is interconnected with other containers. (b) Multiple containers are located within a facility such that a credible common event (excluding extreme malevolent acts and catastrophic release scenarios such as major fires, airplane crashes, and building collapse) could result in release of the contents of multiple containers.* (DOE Order 151.1D, Attachment 3, Paragraph 2.e.(2))
10. *If the quantitative analysis indicates that all incidents evaluated, based on the results of screening performed in Attachment 3, would be classified as less than an Alert, an EPHA is not required to be maintained. The results of the hazardous material screening process and the quantitative analysis may be incorporated directly into the All-Hazards Survey, or may be incorporated by reference in the All-Hazards Survey. Analysis below Threshold Quantity (TQ) levels for chemicals or below TQ for Hazard Category 3 for radiological materials is not required during EPHA and Emergency Action Level (EAL) development.* (DOE Order 151.1D, Attachment 4, Paragraph 2.g)
11. *The EPHA must identify hazards and the potential consequences from unplanned releases of (or loss of control over) hazardous materials identified in the Hazards Surveys, using accepted industry assessment techniques.* (DOE Order 151.1D, Attachment 4, Paragraph 2.a)
12. *The EPHA must include identification of receptor locations of interest for each facility containing significant quantities of hazardous materials including: (1) 30 meters from the release location; (2) 100 meters from the release location; (3) site boundary; (4) emergency response facilities; (5) nearest assembly areas as identified in the Emergency Plan; and (6) nearest offsite at risk population such as emergency buildings, schools, and hospitals.* (DOE Order 151.1D, Attachment 4, Paragraph 2.b)
13. *The EPHA must address the following items: Some facilities, such as underground facilities, require additional consideration of how airborne contaminants may be released, since an atmospheric dispersion model would not provide a valid result.* (DOE Order 151.1D, Attachment 4, Paragraph 2.c)

14. *The EPHA must identify analyzed scenarios using short descriptive names with: (1) tabulated consequences for each scenario at identified receptor locations above, (2) consequences versus distance under conservative and average dispersion conditions. Conservative is defined as a DOE site's 95% worst case or F stability and a wind speed of 1.5 m/s. Average is defined as a DOE site specific average or D stability and a wind speed of 3 m/s, and (3) distances at which the protective action criteria (PAC) and thresholds of early lethality would be exceeded at receptors identified above. The PAC for releases of hazardous materials are listed below.* (DOE Order 151.1D, Attachment 4, Paragraph 2.d)
15. *Depending upon the dispersion model used and other factors, most available models may be inaccurate beyond 25 miles. If results go beyond 25 miles, report the distance as 25 miles; if applicable, farther distances may be reported for information.* (DOE Order 151.1D, Attachment 4, Paragraph 2.e)
16. *The EPHA must document and discuss assumptions, methodology, models, and evaluation techniques used in the EPHA. The EPHA must document functioning and nonfunctioning control measures and engineered safety systems (e.g., containment systems, fire suppression systems, filters, administrative controls, safeguards and security systems).* (DOE Order 151.1D, Attachment 4, Paragraph 2.j)
17. *The EPHA must develop site/facility/activity-specific EALs for the spectrum of potential Operational Emergencies identified by the EPHA and include protective actions corresponding to each EAL.* (DOE Order 151.1D, Attachment 4, Paragraph 2.t)
18. *The EPHA must include a determination of the size of the Emergency Planning Zone (EPZ).* (DOE Order 151.1D, Attachment 4, Paragraph 2.h)
19. *The EPHA must prepare a consolidated/integrated EPZ for the site/facility/activity and submit for approval to the Field Element Manager or appropriate Federal Manager.* (DOE Order 151.1D, Attachment 4, Paragraph 2.i)
20. *The EPHA must analyze scenarios where the same severe event triggers hazardous materials releases from multiple facilities and contain information about the impact of simultaneous or sequential hazardous materials releases from identified receptors above. This can be documented in the EPHA or a site level supplemental planning document. If the EPHA indicates the potential for an Alert, Site Area Emergency, or General Emergency, use the results of the analysis to determine the necessary personnel, resources, and equipment for the Emergency Management Hazardous Materials Program (taking into account approved baseline needs determined through implementation of DOE O 420.1C, Administrative Change 1, Facility Safety).* (DOE Order 151.1D, Attachment 4, Paragraph 2.f)
21. *The EPHA must integrate the analysis of severe events performed as part of the documented safety analysis into emergency planning. For DNFs, include potential events, ranging from low-consequence, high-probability events to high consequence, low-probability events, to ensure a comprehensive picture of the types of events and the range of associated consequences that could occur at a facility, is captured.* (DOE Order 151.1D, Attachment 4, Paragraph 2.l)
22. *The EPHA must integrate severe event guidance consistent with DOE Guide 421.1-2, Implementation Guide for Use in Developing Documented Safety Analysis to meet Subpart B of 10 CFR 830, DOE-STD-3009-2014, Preparation of Nonreactor Nuclear Facility Documented Safety Analysis, and DOE-STD-1189-2008, Integration of Safety into the Design Process, or their updates.* (DOE Order 151.1D, Attachment 4, Paragraph 2.m)
23. *The EPHA must establish and maintain an accurate and timely method for tracking changes in operations, processes, or accident analyses that involve hazardous materials (e.g., introduction of new materials, new uses, significant changes in inventories, modification of material environments). The method must allow sufficient time for emergency management personnel to review the EPHA and modify plans and procedures, as necessary.* (DOE Order 151.1D, Attachment 4, Paragraph 2.k)

24. *Submit the EPHA for approval to the Field Element Manager or appropriate Federal Manager.* (DOE Order 151.1D, Attachment 4, Paragraph 2.n)
25. *The EPHA must be reviewed no less than every three years, and updated, if appropriate, or prior to significant changes to the site/facility/activity or hazardous material inventories. For example, significant changes are those changes which would result in a positive Unreviewed Safety Question for nuclear facilities, as defined in 10 CFR Part 830, Nuclear Safety Management, or in a positive Unreviewed Safety Issue for accelerator facilities, as defined in DOE O 420.2C, Safety of Accelerator Facilities.* (DOE Order 151.1D, Attachment 4, Paragraph 2.o)
26. *If the triennial review of the EPHA determines that there are no updates required, a letter to the Field Element Manager or appropriate Federal Manager must be submitted to document the review and provide notification that an update is unnecessary.* (DOE Order 151.1D, Attachment 4, Paragraph 2.p)
27. *Changes that result in a reduction of hazards with no adverse effect on safety or emergency preparedness and response may be included in the next scheduled review and update.* (DOE Order 151.1D, Attachment 4, Paragraph 2.q)
28. *The EPHA must adjust the emergency management program to be commensurate with hazards that remain after a decontamination and decommission action is completed at each DOE closure site/facility.* (DOE Order 151.1D, Attachment 4, Paragraph 2.u)
29. *Host sites must incorporate the Office of Secure Transportation (OST) EPHA into the site-level emergency management program.* (DOE Order 151.1D, Attachment 4, Paragraph 2.r)
30. *The EPHA must develop an EPHA for shipments that do not satisfy governing Department of Transportation (DOT) regulations and specifications for commercial hazardous materials transport; however, if a shipment satisfies DOT regulations and specifications, then an EPHA is not required.* (DOE Order 151.1D, Attachment 4, Paragraph 2.s)

Performance/Programmatic LOIs

General

- Does the technical planning basis reflect the current operations and hazards at the site/facility/activity?

Hazards Survey

- Has an HS been prepared for the site/facility by the responsible contractor(s) or DOE Federal staff?
- Does the HS cover all the facilities on site? Note: An HS may cover multiple facilities.
- Does the HS identify all the hazards applicable to operation of the site/facility, including chemical, radiological, explosives, hazardous biological agents and toxins?
- Does the HS identify the generic types – natural, technical, and human-caused incidents- of serious emergency incidents or conditions to which the specific facility or activity may be exposed (e.g., fires; flood; tornadoes; earthquakes; hazardous material releases; regulated pollutant or oil spills; safeguards and security incidents; work place accidents; malevolent acts; mass casualties; wildland fires; nearby off-site, non-DOE, hazardous material accidents)?
- Does the HS address the response to severe incidents – when local/regional offsite responders will not be available to assist in the response?
- Does the HS identify emergency management requirements that constitute the basis for the emergency management program for each type of hazard? (Including: DOE orders [other than 151.1], other Federal agency, state, and local emergency planning and preparedness requirements associated with different generic types of emergency incidents or conditions and applicable to the

facility or activity; and existing plans, such as earthquake self-help plans or mass casualty plans, detailing compliance with Federal, State, or local standards, or security requirements and responses incorporated directly into the Operational Emergency Base Program or invoked by reference.)?

- Are the hazardous materials and emergency conditions identified in the HS consistent with other sources; such as documented safety analyses, environmental impact statements, Resource Conversation and Recovery Act (RCRA) plans, operations administrative inventory limits, fire department run sheets, inventory databases, or observations during facility walkdowns?
- Is there a THIRA or equivalent in place that:
  - Identifies potential hazards, threats, capability targets, and resources?
  - Analyzes large scale inventories of fuel oil and gases?
  - Addresses explosions or fires from flammable inventories as potential initiators or contributors to a release?
  - Properly addresses explosive hazards?
  - Analyzes simple asphyxiants and cryogenic materials that are excluded from the EPHA analysis?
- Are any hazardous materials screened from an EPHA analysis and, if so, did the screening criteria meet the exclusions requirements due to its quantity, form, or health rating as described below in the programmatic section?
- Does the HS clearly identify the hazardous materials that must undergo a quantitative analysis in an EPHA?

<u>EPHAs</u>

- Do EPHAs provide technical planning basis information for the development of the Core Program and/or Hazardous Materials Program, commensurate with the hazards?
- Does the EPHA contain a quantitative analysis for all hazardous materials identified in the HS that must be further analyzed?
- Does the EPHA document all assumptions used in the consequence analysis such as:
  - Those similarly used in the DSA?
  - Material-at-risk (MAR) quantities, including barriers credited for reducing MAR quantities in the source term equation such as walls or fire barriers?
  - Application of inventory administrative limits?
  - Each factor in the source term equations?
  - How fire durations were established, such as a certain sized fuel spill from vehicles used on site or fuel storage tank capacities?
  - How bomb blast sizes were established?
  - What dispersion models were used?
  - What NNSA Office of Emergency Operations (NA-40) published interpretations were used?
- Are the assumptions made in the quantitative analysis consistent with operational activities and documented safety analysis documents?
- Do quantitative analysis apply NA-40 instructions where authorization basis methods are not appropriate, such as for establishing MAR quantities where multiple mixed waste drums are stored?
- Are scenarios analyzed that range from low-consequence and high-probability to high-consequence and low-probability?
- Does the set of analyzed scenarios establish bounding scenarios?
- Does the EPHA analyze severe incidents scenarios consistent with DOE Guide 421.1-2?
- Does the set of scenarios include BDBEs including severe events that trigger hazardous material releases from multiple facilities?
- Do analyzed scenarios undergo a full spectrum of barrier analysis, including the inoperability of safety systems and damage to other mitigating features?

- Does the EPHA contain a current, accurate compilation of hazardous material inventories or maximum quantities associated with a facility or activity based on reliable and comprehensive methods of hazardous material identification (e.g., walk-throughs, shipping records, local chemical inventory systems)?
- Are analyzed hazardous materials characterized in the EPHA as follows:
  - Storage location, process used, physical properties, and health effect parameters;
  - Engineered controls, administrative controls, storage segregation, safeguards and safety systems for prevention and/or mitigation of releases are identified; and
  - Actual barriers to release are identified, such as containers, buildings, berms, sumps, catch basins, filters, and heating, ventilation, and air conditioning (HVAC) systems?
- Are results calculated using worst-case and typical weather conditions?
- Are alternate conditions appropriately considered where weather is not a factor, such as in a mine?
- Do calculations use the appropriate PAC or Protective Action Guides (PAGs) for the hazardous material analyzed, as stated in the programmatic section?
- Do calculations establish the areas or "distance to PAC" and "distance to TEL"?
- For chemicals, is PAC established at PAC-2 values and Temporary Exposure Limit (TEL) established at PAC-3 values using the preferred Acute Exposure Guideline Level (AEGL), Emergency Response Planning Guide (ERPG), or temporary emergency response limit (TEEL) value in the EPHA analysis?
- For radioactive materials, is PAC established at 1 rem and TEL established at 100 rem in the EPHA analysis?
- Were radioactive materials analyzed for their radioactive hazard and toxicological hazard?
- Do calculations estimate potential exposures and time of arrival of plumes of important receptors of interest including:
  - Site emergency response facilities
  - Designated assembly areas
  - Facility and site boundaries
  - Offsite receptors of interest such as schools, nursing homes, prisons, and hospitals?
- Does the EPHA include the EPZ that is based on distance to PAC, distance to TEL, and offsite negotiations as described in the programmatic section?
- Were appropriate malevolent events excluded from the EPZ determination because there was an appropriate technical justification categorizing the exclusions as extreme malevolent events?
- Is the EPHA easy to understand regarding what was analyzed, how the results were formulated, and how it relates to facility operations and configurations in a way it can be replicated and effectively used by consequence assessment personnel during Operational Emergency response?
- Does the EPHA appropriately identify each analyzed scenario provide tabulated results for:
  - Consequences at the receptor of interest locations
  - Worst-case and average weather conditions
  - Distance to PAC and TEL
- Did the EPHA identify incident indicators for the analyzed incidents for use in Emergency Action Level (EAL) development?
- Is the EPHA adjusted during the triennial review cycle when there is a reduction of hazardous material due to operational or hazardous material inventory changes or after decontamination and decommission action is complete?
- For OST safe haven and host sites, has the site properly planned for OST hazardous materials?
- Have the results of HS and EPHA been provided to onsite and mutual aid fire departments and security department to facilitate their emergency planning and preparedness?
- Does the EPHA provide information on building infiltration rates or designated shelters for use in implementing effective protective actions?

Programmatic LOIs

Administrative

- Did the site office or appropriate DOE Federal staff approve the HS and EPHA?
- Does the responsible contractor and appropriate DOE Federal staff review and approve the HS and EPHA documents at least every three years? Note: A record to file may serve to document the review if the review concluded that a revision is not required.
- Are the approvals of the current HSs and EPHAs consistent with the triennial review due dates?
- Do procedures provide clear guidance for developing, documenting, and maintaining the HS and EPHA, including identifying roles and responsibilities for review and approval?
- Do procedures require facility management involvement in developing, reviewing, and approving the HS and EPHA?
- Do procedures require the appropriate technical expert involvement, contractor and Federal staff, in developing and reviewing the HS and EPHA?
- Do procedures direct the use of facility tours to confirm hazardous material inventories, use, and storage practices?
- Are Hazards Surveys and EPHAs updated prior to significant changes to the site/facility, operational activities, or to hazardous material inventories, even when a triennial review is not due?
- Are there processes in place to ensure required changes are made to the EPHA and other emergency management program features before new activities, hazardous materials (HAZMAT), or HAZMAT quantities are introduced to the site, such as the use of:
  - The Unreview Safety Question (USQ) process
  - Chemical purchasing processes
  - Inventory database reports
  - Administrative limits established by facility operations personnel and emergency planners.
  - Facility walkdowns
- Does the THIRA or equivalent development and maintenance require:
  - The implementation of Department of Homeland Security Comprehensive Preparedness Guide (CPG) 201, *Threat and Hazard Identification and Risk Assessment Guide?*
  - Identification of potential hazards, threats, capability targets, and resources?
  - An analysis of large-scale inventories of fuel oil and gases?
  - An analysis of explosions or fires from flammable inventories as potential initiators or contributors to a release?
  - A proper analysis of explosive hazards?
  - An analysis of asphyxiants and cryogenic materials that are excluded from an EPHA?

Hazards Survey

- Do procedures define the quantities of chemical hazardous materials considered to be "easily and safely manipulated by one person" in accordance with the provisions of 29 CFR 1910.1450(b)?
- Do HS development and maintenance procedures describe chemical exclusions to be:
  - Materials used in the same form, quantity, and concentration as a product packaged for distribution and use by the general public (e.g., consumer products for household use)?
  - Materials that because their physical form, or other factors (e.g., plausible dispersal mechanisms), do not present an airborne exposure hazard. This includes solid materials in a form with particle size > 10 microns and solid materials with no plausible release scenario to reduce the material to particles < 10 microns; liquids with a vapor (partial) pressure of <10 mmHg at 25°C; and aqueous solutions where the hazardous component(s) is a non-volatile solute?

  - Materials with a Globally Harmonized System (GHS) Acute Toxicity Hazard Category of 3, 4, or 5, if approved for site use by the Federal site office?
  - Solid or liquid materials with any GHS Corrosion/Irritation (skin or eye) Hazard Category, if approved for site use by the Federal site office?
  - Gaseous materials with a GHS Corrosion/Irritation (skin or eye) Category 2 or 3, if approved for site use by the Federal site office?
  - Simple asphyxiants and cryogenic materials may be excluded as long as the material cannot impact collocated populations, but will be analyzed in the THIRA?
  - Fuel oil and gases (e.g., petroleum, propane, etc.) are excluded in the definition of hazardous materials used in this Order Materials in solid form for which there is no plausible dispersal mechanism; materials stored in DOE type B shipping containers with overpack, if the certificates of compliance are current and the materials are authorized by the certificate?
  - Materials used in exempt commercially available products?
- Do HS development and maintenance procedures describe radioactive materials exclusions to be:
  - Sealed radioactive sources that are engineered to pass the special form testing specified by DOT or American National Standards Institute (ANSI)?
  - Radioactive hazardous materials in quantities less than those for hazard category 1, 2, and 3 facilities, as defined in 10 CFR Part 830, *Nuclear Safety Management*? This applies specifically to those materials contributing to the categorization of such a facility when in quantities greater than the largest Category 3 value (or if the sum of the ratios) exceeds any of the following:
    - DOE-STD-1027-92, *Hazard Categorization and Accident Analysis Techniques for Compliance with DOE Order 5480.23, Nuclear Security Analysis Reports*
    - NA-1 SD G 1027, Change Notice 1, on *Using Release Fraction and Modern Dosimetry Information Consistently with DOE STD 1027-92, Hazard Categorization and Accident Analysis Techniques for Compliance with DOE Order 5480.23, Nuclear Safety Analysis Reports,* dated 11-28-11.
    - LA-12981-MS, Table of DOE-STD-1017-92 *Hazard Category 3 Threshold Quantities for the International Commission on Radiological Protection (ICRP)-30 List of 757 Radionuclides*, Los Alamos National Laboratory (LANL) Fact Sheet, 2002.
    - LA-12846-MS, Specific Activities and DOE-STD-1027-92 *Hazard Category 2 Thresholds, LANL Fact Sheet*, 1994.
- Do procedures provide a clear description of the hazardous materials screening process and the results of its application to the hazardous materials in the facility/activity for HS and EPHA development?
- Does the hazardous material screening procedure require the assessment of all hazardous materials (e.g., radiological, chemical, explosives, hazardous biological agents and toxins) in a facility/activity for a qualitative assessment?
- Does the hazardous material screening process procedure require the identification of specific hazardous materials and quantities that, if released, could produce impacts consistent with the definition of an Operational Emergency and then must undergo a quantitative analysis?
- Does the screening process identify candidate hazardous materials that if released in an uncontrolled manner would:
  - Immediately threaten or endanger those who are in close proximity?
  - Have the potential for dispersal beyond the immediate vicinity in quantities that threaten on-site personnel or the public?
  - Have a potential rate of dispersal to require a time-urgent response to implement protective actions for workers or the public?
- Are all biological hazardous materials in a facility activity subjected to a hazardous material screening process?

- For biological and toxin hazards, does the HS development and maintenance procedure use the minimum quantities specified in Federal regulations for further analysis in the EPHA as criteria, such as:
  - HHS regulations [42 CFR 73, *Select Agents and Toxins*]?
  - USDA regulations [7 CFR 331, *Possession, Use and Transfer of Select Agents and Toxins,* and 9 CFR 121, *Possession, Use and Transfer of Select Agents and Toxins*]?

EPHAs

- If biological agents and toxins require further analysis in an EPHA, then is a Hazardous Materials Program established?
- Does the EPHA development and maintenance procedure require the identification of receptors of interest that includes, at a minimum:
  - 30 meters from a hazardous material release location
  - 100 meters from a hazardous material release location
  - The site boundary
  - Emergency response facilities
  - Nearest assembly areas identified in the emergency plan
  - Nearest offsite risk populations, such as emergency buildings, schools, and hospitals
  - Up to 25 miles if projections indicate criteria is exceeded further than 25 miles?
- Do procedures exclude chemicals from further analysis in the EPHA using the following criteria:
  - Materials used in the same form, quantity and concentration as a product packaged for distribution and use by the public
  - Materials that have health hazard rating of 0, 1, or 2 based on National Fire Protection Association (NFPA) 704; and
  - Solid or liquid materials that because of their physical form or other factors do not present an airborne exposure hazard
- Are chemicals with an assigned health hazard rating of 3 or 4 based on NFPA 704 identified for further analysis with the exception of:
  - Quantities less than a quantity that can be "easily and safely manipulated by one person" as determined in accordance with provisions of 29 CFR 1910.1450(b) can be excluded?
  - Ordinary products of combustion?
  - Very dilute and chemically neutralized chemical waste?
- Do procedures consider the possibility that excluded materials could initiate, through fires, explosions, or mixture with water, the release of other hazardous materials?
- Do screening procedures consider chemical wastes in quantities and concentrations that would require classification for further analysis?
- Does the screening process consider storage areas where small containers are screened from an EPHA analysis based on small quantities and then stored together where the aggregate of material may be affected by a common release mechanism other than extreme malevolent acts and catastrophic release scenarios?
- Do screening procedures consider systems where small containers that can be screened from an EPHA analysis may be interconnected and the aggregate of material may be affected by a common release mechanism other than extreme malevolent acts and catastrophic release scenarios?
- For sites with underground facilities, do procedures address how to analyze the distribution of airborne contaminants?
- Do source term determination procedures provide guidance on the establishment of conservative MAR quantities by considering walls, fire barriers, proximity to other hazardous materials, and other design features where a common incident initiator, such as a fire, explosion, or structure collapse, could affect more than one container?

- Does the EPHA development and maintenance procedure require calculations to use:
  - Both conservative and average dispersion conditions? Conservative conditions are the site's 95% worst case or F stability and wind speed of 1.5m/s and average conditions are the site's specific average or D stability and 3 m/s.
  - Appropriate dispersion conditions for underground facilities?
  - Are distances to exceed PAC and TEL (for the identified receptors) presented?
  - Environmental Protection Agency (EPA) Protective Action Guides (PAG) value of 1 rem for PAC and 100 rem for TEL for radioactive material releases?
  - EPA PAG value of 100 rem for TEL for radioactive material releases?
  - PAC values of Acute Exposure Guidelines Levels (AEGL-2), Emergency Response Planning Guidelines (ERPG-2), or Temporary Emergency Exposure Limits (TEEL-2) in that order for chemical releases?
  - TEL values of AEGL-3, ERPG-3, or TEEL-3 in that order for chemical releases?
- Do procedures identify the appropriate dispersion models for performing a quantitative assessment?
- Do procedures provide sufficient guidance for documenting quantitative assessment assumptions and results?
- Do procedures direct the use of models and input data that most closely models the analyzed scenario, such as:
  - Ground level or elevated heights
  - Heavy gas or light gas
  - Fires and Explosions
  - Spills of volatile liquids
  - Estimated Pool sizes
  - ICRP respiration rates
  - Correct dose conversion factors?
- Do procedures provide sufficient guidance for determining incident classifications, protective actions, and EPZ development?
- Do procedures adequately describe how onsite hazardous transports are analyzed?
- Do procedures instruct emergency planners to identify potential offsite hazardous material release sources, such as nearby industrial facilities, water treatment facilities, transportation (train, truck, and barge), hostile attack, wildland fires, and natural phenomena events?
- Do procedures describe how to establish a spectrum of potential emergency event/condition scenarios postulated for analysis in the EPHA? Does the spectrum include:
  - Scenarios analyzed in the DSA?
  - Applicable initiating events (e.g., fire, explosion, natural phenomena, malevolent events, accidents, external events)?
  - Contributing events, accident mechanisms, equipment or system failures, engineered safety system and control failures, source terms, material release chemistry and characteristics, environmental transport and diffusion, exposure considerations, and health effects?
  - Range of event probabilities and consequences, from low probability, high consequence to high probability, low consequence, including BDBEs?
  - The potential for simultaneous releases from multiple facilities that could occur onsite?
  - Incidents exclusively affecting onsite personnel, as well as those affecting the offsite public?
  - Potential malevolent acts applicable to the facility based on the site's Vulnerability Assessment or Design Basis Threat document, as applicable?
  - Potential impacts from severe natural phenomena incidents that could have cascading effects (e.g., seismic event causing failure of multiple dams, or even a failure of one dam causing multiple downstream dams to fail)
  - Incidents that include a total loss of electrical power?

- Do procedures describe the process to identify extreme malevolent events that includes collaboration of emergency planners and security personnel?
- Do procedures ensure that emergency events or conditions are not excluded from analysis in the EPHA based solely on calculated occurrence probabilities or arbitrarily defined delimiters (e.g., credible or incredible, likely or unlikely)?
- If applicable, did the site/facility prepare, submit, maintain and update off-site consequence analysis in a Risk Management Plan to include worst-case release scenarios for toxic substances held above threshold quantity and for regulated flammable substances above threshold quantity? (40 CFR 68, *Chemical Accident Prevention, Subpart G, Risk Management Plan))*
- Are biological agent release scenarios analyzed to obtain indicators for recognizing OE events/conditions and for initial protective actions? Is the analysis methodology documented in the EPHA?
- Do EPZ development procedures:
  - Require the use of distance to PAC and distance to TEL?
  - Apply a test of reasonableness that is agreed upon by local authorities to supports an effective means of implementing protective action recommendations?
  - Establish the site EPZ by consolidating facility EPZs?
  - Limit the EPZ to no more than 10 miles?
  - Require the site office or appropriate DOE Federal manager approval of the EPZ?
  - Exclude biological hazardous material release scenarios for determining the size of the EPZ, where applicable?
- After a D&D action is completed, is the Operational Emergency Hazardous Materials Program adjusted to be commensurate with the hazards that remain?
- Does the site have an OST EPHA or equivalent for OST shipments (to provide the technical planning basis for the OST Operational Emergency Hazardous Material Program)?
- Has the OST EPHA (and EALs) been integrated into the site's emergency response plans and procedures?
- For OST safe haven and host sites, has the site established procedures that integrate the site's emergency management program with OST shipments?
- Does the site have a procedure for developing an EPHA for shipments that do not satisfy governing DOT regulations and specifications for commercial hazardous materials transport?

Good Practice

- None.

REVIEW APPROACH

Record Review:

- Review the hazardous material database.
- Review completed HSs, including implementation of the hazard screening process.
- Review completed EPHAs.
- Review related safety documents (e.g., DSA, Environmental Impact Statement, and Process Hazard Analyses).
- Review the site and facility EALs.
- Review the documentation of the site EPZ determination.
- Review site/facility alarm, abnormal and emergency response procedures to verify EALs are effectively integrated into the response.
- Review procedures for developing, reviewing, approving, and maintaining HS documents.

- Review procedures for developing, reviewing, approving, and maintaining EPHA documents.
- Review procedures for developing, reviewing, and approving the EPZ.
- Review the site Emergency Plan.
- Review contractor requirements, implementing procedures, guidance, and facility specific procedures governing work control processes.
- Review procedures for managing process changes, configuration control, procurement, and hazardous material inventory control.

Interviews:
- Personnel responsible for developing, reviewing, and maintaining the all-hazards planning documents.

Observations:
- Walk down selected facilities associated with the HS and EPHA review effort, as necessary.
- Observe/conduct tabletop interviews/exercises using the EALs.
- Perform verification calculations for selected EPHA scenarios.

4.3 Emergency Response Organization

OBJECTIVES

ERO.1: An Emergency Response Organization (ERO) is a structured organization with overall responsibility for initial and ongoing emergency response.

CRITERIA

1. *At a minimum, an ERO must –*
   a) *be established and maintained for each DOE site/facility/activity.*
   b) *consist of personnel with capabilities and resources based on the all hazards planning basis;*
   c) *assign an individual ERO position with the authority to implement the site/facility/activity emergency management plan to include management and control of all aspects of the site/facility/activity response;*
   d) *designate and train a primary and at least one alternate for each ERO position, excluding first responders in the field, to be available to implement the emergency management plan for initial and ongoing emergency response;*
   e) *establish an effective first responder capability to mitigate all hazard emergencies including emergency medical, fire, hazard material, and applicable rescue emergencies as derived through the Baseline Needs Assessment, Hazard Survey, and THIRA.*
   f) *establishes mechanisms, consistent with National Incident Management System (NIMS), for expanding the initial response capability when local resources are no longer adequate to control the emergency incident;*
   g) *establish control at the event/incident scene in accordance with the Incident Command System (ICS) portion of the NIMS or integrate ERO activities with those of local and Federal agencies and organizations that provide onsite emergency response services in accordance with ICS/NIMS.*

(DOE Order 151.1D, Attachment 3, Paragraph 3.a-g)

Performance

During a performance demonstration –

General

- Are all emergency response activities, including search and rescue, incident mitigation activities, field monitoring, and reentry planned and controlled with a focus on health and safety of emergency responders within preplanned protective action exposure guidelines?
- Is information accurately and efficiently transmitted in an orderly and documented manner throughout the chain of command and between/within emergency facilities?
- Are an accurate awareness of the situation and a common operating picture established throughout the chain of command and between/within emergency facilities, including offsite?
- Are the lines of communication effective in establishing a common operating picture among the ERO response elements?
- Was information necessary to determine the need for ERO activation collected and analyzed?
- Was the ERO appropriately activated?
- Is ERO activation based on actual or potential emergency conditions?
- Is the ERO functionally staffed and activated in a timely manner?
- Are key emergency response facilities operational within an hour after declaration of an operational emergency?
- Is staffing of ERO positions following declaration of an operational emergency orderly, controlled and verifiable?
    - Do personnel gain access to response stations without impediment?
    - Are non-ERO personnel excluded from emergency response work areas?
    - Are individuals in key response positions readily identifiable by other ERO staff?
- Is the transfer of a command and control function to another emergency facility, within an emergency facility, or to a command external to the ERO or ICS, completed in an orderly and formal manner?
- Are all ERO personnel are informed of the transfer of command?
- Do ERO members:
    - Perform roles, functions, and interfaces in a timely, effective and efficient manner?
    - Demonstrate proficiency in their use of emergency equipment, facilities, and resources?
    - Clearly acknowledge and understand authorities and responsibilities, especially those relating to implementation of protective actions?
    - Identify and assess available response resources and, as appropriate, take account of resource limitations and specific capabilities?
- Were the emergency plan implementing procedures executed according to the response structure described in the site/facility emergency plan?
- Did the emergency plan implementing procedures, checklists, job aids, etc. lead to an integrated, effective response by the ERO?
- Did the EPIPs, checklists, job aids, etc. provide for a complete response to the event?

Facility – Facility Emergency Management Team (EMT)

- Did facility personnel identify and report the event in accordance with facility procedures?
- Did facility personnel/operators alert other facility personnel of the dangers?
- Did facility personnel/operators take actions to stop or mitigate the release (when safe to do so) prior to leaving the scene (as specified in facility procedures)?

- Does the operations supervisor/facility manager adequately and effectively perform assigned functions - utilizing sufficient and practical knowledge of the affected facility and its operations, the emergency response team and its mission, and available tools and resources necessary to affect appropriate response and mitigate the emergency?
- Using facility procedures and facility instrumentation, did facility personnel take steps to identify the source, path, and level of hazardous material release? Take steps to stop or mitigate the release?
- Are appropriate PAs (and Protective Action Recommendations (PARs)) determined and communicated in a timely manner?
- Does the facility (site) provide timely warning/PAs to nearby facilities in the event they will be impacted by the hazardous material release?
- Did facility personnel shut down operations involving hazardous material and secure classified material prior to evacuation (if safe to do so)?
- Did facility personnel follow procedures for placing processes and the facility in a safe shutdown condition prior to evacuation?
- Did facility personnel take shelter or evacuate in accordance with facility procedures?
- Were evacuation alarms/signals/notifications readily received and understood?
- If the facility was evacuated, did:
  - Evacuation routes ensure worker safety?
  - Personnel report to the designated muster station?
  - Execute assigned responsibilities, such as completing and reporting accountability?
  - Establish communications with the facility EMT, Incident Commander (IC) or site ERO?
- Did facility personnel implement procedures to verify and/or improve the effectiveness of shelter-in-place?
- If facility operators remained in the facility operations center, did the operators confirm/monitor the center for habitability?
- Is adequate data obtained and analyzed to support facility staff in assessing and mitigating emergency incidents?
- Are the equipment and resources available, operable, and sufficient to support an effective facility response?
- Is tasking clearly made to emergency response staff and are actions followed through to completion, when priority actions are identified?
- Are operating, abnormal, and emergency response procedures executed properly to support the response to the event?
- Do facility operators have adequate communications with the facility EMT and the IC, among others?
- Did a senior facility person assume the role of Duty Officer/IC/ Emergency Director (ED) during the initial stages of the event?
- Was the facility EMT activated in a timely manner (sufficient to implement an effective response)?
- Were adequate, timely notifications made to the facility EMT?
- Did EMT activation include safe routing information to the response locations?
- Is the facility EMT adequately staffed to support an effective response?
- Were facility EMT members adequately briefed on the event, hazards, and expected operations; provided appropriate Personal Protective Equipment (PPE) prior to entry into potentially hazardous areas; and appropriately monitored for exposure to hazardous materials?
- Did the facility EMT take appropriate steps (per procedures) to verify building evacuation?
- Did the facility EMT take appropriate steps (per procedures) to complete accountability in a timely manner?
- Do trained and assigned individuals assume and carry out responsibilities for building or facility accountability in the event of personnel evacuation?
- Did the facility EMT report the results of accountability to the IC and/or EOC?

- Is initial accounting for all evacuated personnel completed in a timely manner to support initial search and rescue activities?
- Is accountability continued to support ongoing search and rescue activities following an emergency evacuation?
- Was a facility person dispatched to meet the site responders?
- Did facility personnel provide an accurate briefing to the responding IC? Turnover? Become part of the IC team?

Operations/Communications Center

- Was adequate information collected to support categorization and classification of the event?
- Was the information (e.g., event information, dispatch information, status of PAs, and accountability) in emergency calls accurately recorded?
- Were response assets dispatched in a timely manner and in accordance with site procedures?
- Were response assets provided with accurate event and safe routing information?
- Did the Duty Officer categorize and classify the event in a timely, accurate manner?
  - Were EALs used to determine and implement PAs?
  - Were EALs used to determine PARs?
  - Were PAs and PARs provided in a timely manner?
- Were appropriate medical resources dispatched in the case of reported injuries?
- Did operations/communications center personnel make accurate, timely notifications and communications; especially for PAs and PARs?
- Did operations/communications center equipment function effectively and support accurate, timely notifications and communications (to workers, responders, and offsite authorities)?
- Were a sufficient number of communications channels available to support the required communications and coordination?
- Did operations/communications center personnel adequately support the completion of accountability?
- If applicable, did operations/communications center personnel activate the Public Warning System in a timely manner?
- Did the Duty Officer adequately manage the on-site response until relieved by the Emergency Director?
- Was sufficient information available in the operations/communications center to support situational awareness and a common operating picture? To support effective implementation of operations/communication center responsibilities?
- Did the information management system(s) operate properly?
- Was information recorded to create an accurate record of the response?
- Did procedures and checklists support an effective response?
- Was the operations/communications center adequately staffed so that personnel could perform their duties in a timely manner? Or, was there a backlog of activities that hampered the response?

Incident Command/Incident Scene

- Is an IC in charge at the event scene?
- Does the initial briefing and turnover provide the IC with sufficient information to respond to the event while protecting the health and safety of workers, responders, and the public?
- Is control at the event/incident scene consistent with the NIMS ICS, which integrates local agencies and organizations that provide onsite response services?

- Is control and coordination at the event/incident scene consistent with the National Response Plan (NRP) and the NIMS/ICS, which integrates local agencies and organizations that provide onsite response services?
- Are protective actions for site and facility workers appropriately determined and implemented?
- Are protective actions for responders appropriately determined and implemented?
- Is the incident assessed and priorities established with lifesaving, safety, and incident stabilization receiving top priority?
- Are incident command strategic goals and tactical objectives clear and is a flexible action plan implemented?
- Is the incident assessed and priorities established with lifesaving, safety, and incident stabilization receiving top priority?
- Does the incident command evolve from providing oral direction to the development of a written Incident Action Plan (IAP)?
- Does the incident command staff continually assess the situation, develop a mitigation strategy, and request additional assets as needed?
- Does incident command coordinate internal and external response assets in an effective manner?
- Is an ICS command post strategically located in a safe area where command control may take place safely and effectively?
- Are command post and staging area habitability periodically assessed and moved as necessary for safety purposes?
- Do the required support staff (RadCon, Industrial Hygiene (IH), criticality safety, facility liaison, etc.) report to the incident command post?
- Does incident command staff ensure that response personnel take necessary precautions for personal safety and contamination control as follows:
    - Incident command staff establishes a staging area where arriving asset personnel are briefed, communication are checked, special equipment is issued and assets are deployed upon request?
    - Asset personnel being released are debriefed; personnel are accounted for; personnel and equipment are surveyed for contamination; decontaminated as necessary; and issued equipment is returned?
- Are responsibilities of Incident Command carried out in accordance with 29 CFR 1910.120(q)?
    - Were appropriate emergency operations implemented?
    - Did the IC ensure personal protective gear appropriate to the hazard was worn?
    - Where inhalation hazards are present, did the IC ensure that positive pressure Self Contained Breathing Apparatus (SCBAs) were worn (until air monitoring showed a decreased level of respiratory protection was required)?
    - Did the IC limit the number of responders exposed to the potential hazards?
- Is the division of authority and responsibility between the incident commander and emergency director positions clearly established and maintained?
- Does the IC establish effective control at the scene of an event/incident and integrate activities with those of local agencies and organizations that provide on-site response services?
- Does incident command coordinate internal and external response assets in an effective manner?
- Does incident command maintain effective communications with other response locations/elements? Provide a sufficient number of briefings?
- Do incident command staffs ensure that response personnel take necessary precautions for personal safety and contamination control as follows:
    - Incident command staff establishes a staging area where arriving asset personnel are briefed, communications are checked, special equipment is issued and assets are deployed upon request?
    - Asset personnel being released are debriefed; personnel are accounted for; personnel and equipment are surveyed for contamination; decontaminated as necessary; and issued equipment is returned?

- Are responsibilities of Incident Command carried out in accordance with this reference requirement [29 CFR 1910.120(q)(3)]?
- Are search and rescue operations carried out in an efficient manner, coordinating their efforts with medical, IH, and health physics (HP) personnel?
- Are injured personnel properly extricated, immobilized and moved during search and rescue operations?
- Were potentially contaminated injured personnel appropriately transported and treated (in accordance with the applicable MOA/MOU)?
- Is a Safety Officer designated and provided authority and responsibilities in accordance with 29 CFR 1910.120 (q)?
  - Is the safety officer knowledgeable of the operations being performed?
  - Does the safety officer identify and evaluate hazards and provide direction with respect to the safety of operations for the emergency?
  - Does the safety officer inform the IC of any actions needed to correct a situation of imminent danger (to responders)?
- If required, did the ERO effectively expand to include a NIMS-defined incident complex involving multiple facilities within an area, assigned to a single IC, and managed under a single ICS?

Fire & Rescue

- Are fire/rescue personnel and equipment assembled and deployed to the scene of the emergency in a safe (including safe routing) and timely manner?
- Do fire/rescue personnel take necessary precautions for contamination, exposure, heat, and personal safety?
- Do fire/rescue personnel where appropriate PPE for contamination, exposure, heat, and personal safety?
- Did firefighters stage in a safe, upwind location? Monitor for habitability?
- Are both on-site and off-site fire personnel outfitted with the appropriate specialized equipment and supplies specific to the on-site hazards?
- Are fire department vehicles, firefighting, HAZMAT, and communications equipment operable and readily available for use?
- Were firefighting operations conducted in accordance with site plans and procedures and national standards?
- Did firefighting operations reflect the pre-plans for the hazardous chemical and radiological materials in the facility?
- Did firefighters implement actions to protect the facility from a criticality event during the firefighting operations?
- Were HAZMAT operations conducted in accordance with site plans and procedures and national standards?
- Did HAZMAT operators use PPE that was appropriate to the potential exposure?
- Did the HAZMAT operations set up and execute hot, warm and cold zones; establish decontamination lines; and conduct decontamination in accordance with established procedures?
- Were firefighting personnel adequately monitored for contamination?
- Were responders briefed about potential hazards prior to implementing operations?
- Did responders determine and wear appropriate protective PPE?
- Did the ambulance respond safely to the scene or staging area? Safety routing provided?
- Was appropriate PPE available and utilized by responding medical personnel?
- For a mass casualty situation, were triage operations established and executed?
- Were injured personnel treated as required and transported safety, if necessary?

- Were injured, contaminated personnel treated per procedure?
- If injured, contaminated personnel were transported, was the receiving facility notified of the need to prepare?
- If injured, contaminated personnel were transported, were appropriate actions taken to limit the spread of contamination?
- If mutual aid responded, were the responders appropriately apprised of the hazards and equipped with the necessary PPE?

Security

- Are security procedures of protective forces for carrying out responsibilities during response to OEs promptly, safely, efficiently and effectively implemented?
- Did the Central Alarm Station dispatch security forces in a timely manner? Were safety routing instructions provided?
- Did the lead security officer join the IC and serve as the on-scene director for security forces?
- Was the event scene effectively cordoned off?
- Is an ICS implemented for security emergencies in accordance with NIMS/ICS requirements?
- Is the response of protective force personnel and equipment characterized by effective command and control?
- Are security procedures of protective forces for carrying out responsibilities during response to OEs promptly, safely, efficiently and effectively implemented?
- Was a security response plan developed?
- If the FBI reported to the event scene for a security event, was command transferred to the FBI?
- Are security and law enforcement measures implemented during a physical attack that impact worker and responder access and egress (e.g., lockdown) coordinated through the ERO?
- Is the response of protective force personnel and equipment characterized by effective command and control?
- Is access and egress control quickly and properly maintained for site/facility, and impacted areas and emergency response facilities?
- Were security personnel provided with information on safe locations to establish control points?
- Do security practices facilitate timely movement and access of site/facility operating and response personnel (including off-site personnel) to required areas during emergency situations?
- Under emergency conditions, are material accountability and protection for Special Nuclear Material and other critical DOE assets handled in a timely and effective manner?
- Is common protocol for local law enforcement backup of the onsite security force used? (e.g., use of deadly force, weapons employment, tactics, code words, radio frequencies, etc.)
- Does a mutual understanding of authorities and responsibilities, response plans, utilization of command and control facilities, and terminology enable site security to effectively coordinate and correlate response activities with other components of the ERO?
- Is access and egress control quickly and properly maintained for site/facility, and impacted areas and emergency response facilities?
- Do security practices facilitate timely movement and access of site/facility operating and response personnel (including off-site personnel) to required areas during emergency situations?

Field Teams/ Field Monitoring

- Did assigned field teams report to the emergency response facilities in a timely manner?
- Are field teams well-directed and effectively controlled by emergency response management who:
  - Provide directions to survey specific areas?

    - Provide directions to minimize hazardous material exposure by exiting high airborne and whole-body dose areas or high concentration areas, when not actively engaged in sample and survey activities?
    - Set exposure limits for survey and tracking teams, and solicit and record survey results?
- Are teams briefed on facility and meteorological conditions and exposure control procedures before deployment and when changes occur?
- Do teams implement survey and sampling procedures in a timely manner:
- Are field teams provided with adequate monitoring equipment and personal protective equipment (PPE) to accomplish field monitoring and plume tracking within and beyond the EPZ?
- Do teams correctly use protective equipment?
- Is the required equipment adequate, accessible, functional, and calibrated?
- Do teams make effective use of maps or general arrangement drawings showing pre-determined and potential monitoring points?
- Are teams briefed on facility and meteorological conditions and exposure control procedures before deployment and when changes occur?
- Are field responders aware of the hazards and safe routes to the scene?
- Do teams maintain effective communications to transmit accurate and timely readings and results to their team coordinator?
- Do teams utilize proper survey equipment and log results accurately?
- Do teams collect samples, bag and mark them, and log results accurately and efficiently?
- Are samples received, properly packaged, and labeled with information such as sample time and date, sample location, volumetric data, sample media, and sample or survey collection person's name?
- Are analysis procedures and equipment used to support processing of samples received, either properly analyzing the samples in the field or transporting them to a laboratory?
- Are analysis results promptly and accurately communicated to other emergency response organizations?
- Are teams debriefed upon return from assigned missions and their accomplishments, exposures, and status information are recorded and made available to other teams and emergency facilities?

<u>Emergency Operations Center – Emergency Management Team</u>

- Was the EOC manned and operational in a timely manner?
- Is the division of authority and responsibility between the incident commander and emergency director positions clearly established and maintained?
- Did the EOC EMT effectively support the IC and other field operations?
- Did the EOC EMT effectively manage the safety, security, and health activities away from the event scene?
- Did the EOC EMT effectively track and manage PAs away from the event scene (e.g., shelter-in-place, evacuation, and accountability)?
- Did the EOC EMT determine whether a partial or full site evacuation would be required?
- If so, did the EOC EMT properly plan and execute the evacuations?
- Did the EOC EMT effectively communicate offsite PARs with the appropriate local agencies?
- Does the Emergency Director (ED) adequately and effectively perform assigned functions? Demonstrate sufficient and practical knowledge of the:
    - Affected facility and its operations?
    - Emergency response teams and their missions?
    - Available tools and resources necessary to affect appropriate response and mitigate the emergency?
- Does the ED review the initial event categorization and classification to ensure it is correct?

- Does the ED make/approve subsequent changes in event categorization and classification, PAs, and PARs?
- Do the responsible EOC operations and technical support staffs determine and implement a reasonable, well-planned course of action within their sphere of responsibility, based on current knowledge of the situation?
- Is an individual assigned responsibility to communicate with personnel representing DOE/NNSA assets involved in response to coordinate logistics, ensure that effective communications are initiated and maintained, and ensure that data exchanged using consistent units of measure?
- Is control of operations, monitoring and repair teams clearly vested in a single position or clearly defined between multiple positions?
- Are the activities of the response elements (away from the scene) effectively coordinated?
- Does the responsible individual properly authorize emergency response personnel to receive exposures in excess of site administrative limits or other Federal criteria for carrying out lifesaving or other emergency activities, when required?
- Is tasking clearly made to emergency response staff and are actions followed through to completion, when priority actions are identified?
- Do notification and communication systems provide accurate, timely notice of off-normal events to response organizations, facility personnel, and co-located site workers and facilities?
- Do specialty groups supporting the response staff provide timely information to decision-making process?
- Is adequate data obtained and analyzed to support operations staff in assessing and mitigating emergency incidents?
- Is information accurately and efficiently transmitted in an orderly and documented manner throughout the chain of command and between/within emergency facilities?
- Are periodic briefings provided on status of the emergency and current significant response priorities and activities?
- Are communications maintained with and is information provided regularly to DOE Headquarters (HQ) emergency management team?
- Does EOC management effectively coordinate state and DOE site requests for use of DOE/NNSA assets?
- Is an individual assigned as liaison with personnel representing DOE/NNSA assets involved in response to coordinate logistics, ensure that effective communications are initiated and maintained, and ensure that data exchanged using consistent units of measure?
- Are EOC personnel provided with adequate briefings on safety, operations, communications and hazards before being deployed? Is situational awareness and a common operating picture established?
- Does the responsible individual properly authorize emergency response personnel to receive exposures in excess of site administrative limits or other Federal criteria for carrying out lifesaving or other emergency activities, when required?
- Do specialty groups supporting the response staff provide timely information to the decision-making process?
- Are teams debriefed upon return from assigned missions; their accomplishments, failures, exposures, and status information recorded and made available to other teams and emergency facilities?
- Does the Emergency Director or designee personally approve release of notification information?
- Did EOC procedures and checklists support an effective response?

Support Functions

- Were emergency medical services (EMS) personnel and equipment dispatched promptly when required?
- Were EMS responders provided with safe routing and rendezvous instructions? Approach the event scene from a safe direction?
- Did EMS responders have adequate communications equipment to maintain situational awareness and a common operating picture?
- Were EMS personnel informed of potential hazardous material exposures? Potential contamination?
- Were EMS personnel provided with appropriate PPE for the potential hazardous material exposure?
- Did EMS personnel and other ERO support personnel keep accurate records of injured and/or contaminated personnel (such as nature of injuries, potential contamination, disposition of patient, and destination facility)?
- Were appropriate steps taken to protect patient privacy?
- If necessary, was triage effectively performed and managed?
- Were potentially contaminated injured personnel appropriately transported and treated (in accordance with the applicable MOA/MOU)?
- Were radiation protection and/or industrial health & safety personnel appropriately included in the incident command and response teams?
- Did the radiation protection and/or industrial health & safety personnel perform adequate monitoring to determine the risk of hazardous material exposure to responders and recommend effective PPE?
- Are facility and field repair and maintenance activities are carried out in a timely and efficient manner?
- Do emergency repair and maintenance activities include personnel protection and monitoring as well as coordination with support groups, such as health physics and industrial hygiene personnel?
- Are proper tools available for repair and maintenance activities and the procurement of replacement parts expedited?
- Are emergency work order procedures used and is emergency tagging implemented?

Offsite Interface

- Were offsite agencies engaged and integrated into the response as described in the emergency plan, MOAs, MOUs, and procedures?
- Were local authorities provided with timely, accurate information at the initiation of the event and periodically throughout the event?
- Was the information sufficient for the offsite authorities to be aware of the situation and the operating picture at the site/facility?
- Did local authorities receive and understand the PARs issued by the site?
- Were local protocols followed in providing notifications and warnings to members of the public, especially those close to the site?
- Does the fully staffed ERO establish effective internal and external interfaces with other agencies and organizations? External interfaces may include: local, state, tribal and Federal agencies, and non-governmental groups such as concerned citizens and the media.
- Is an individual in the ERO assigned liaison responsibilities for coordinating with offsite agencies to ensure that effective communications are initiated and maintained during an emergency?

Programmatic LOIs

- Has the site/facility established and maintained an ERO, a structured organization with overall responsibility for initial and ongoing emergency response and mitigation, for each facility/site?
- Does the contractor at DOE/NNSA Operational Emergency Hazardous Material Program facilities establish and maintain an ERO for each site/facility with overall responsibility for the initial and ongoing response to and mitigation of an emergency?
- Is the ERO defined in the emergency plan and implementing procedures?
- Do the emergency plan and EPIPs define the roles and responsibilities of individual ERO members?
- Are procedures and checklists available to implement the roles and responsibilities?
- Do the procedures/checklists accurately implement the roles and responsibilities described in the emergency plan(s)?
- Are individual checklists available to assist the performance of individual ERO member's duties?
- Are an adequate number of experienced and trained personnel, including designated alternates, available on demand for timely and effective performance of ERO functions?
- Is the organizational configuration of the ERO based on actual or potential emergency conditions?
- Is ERO activation based on actual or potential emergency conditions?
- Does the site/facility manage personnel availability (through ongoing and standby staffing of ERO emergency facility positions and response teams) to ensure ERO functions are effectively accomplished?
    - Using a technique such as duty-cycle or static roster to ensure that qualified personnel are available on-demand and properly assigned.
    - Ensuring that sufficient trained personnel for initial and ongoing response, including designated alternates, are candidates for call-up in each functional area.
    - Periodically reviewing ERO rosters for accuracy.
    - Periodically reviewing and updating ERO personnel qualifications.
- Are clear areas of responsibilities between decision makers predefined in plans and procedures?

<u>Facility – Facility Emergency Management Team</u>

- Does the facility have an emergency plan describing, for example, the potential hazardous material events, response strategies, roles and responsibilities, etc.?
- Are procedures and checklists available to implement the roles and responsibilities?
- Do the procedures/checklists accurately implement the roles and responsibilities described in the emergency plan(s)?
- Are all personnel needed to perform duties, beyond those specified by 29 CFR 1910.120 for the first responder awareness level, during a response to any of a broad range of emergencies defined in the Hazards Survey or EPHA considered members of the ERO?
- Does the facility have implementing procedures, checklists, or other instructions that contain the detailed instructions for responding to expected emergencies?
- Do normal, alarm, abnormal, and emergency procedures provide adequate direction for responding to and mitigating expected hazardous material events?
- Do the facility operating procedures progress smoothly from alarm to abnormal and emergency events?
- Do trained and assigned individuals assume and carry out responsibilities for building or facility accountability in the event of personnel evacuation?
- Does the contractor at Hazardous Material Program facilities establish and maintain an ERO with overall responsibility for the initial and ongoing response to and mitigation of an emergency?

- Have the Hazardous Material Program facilities established and maintained an ERO with overall responsibility for initial emergency response and mitigation?
- Do the emergency plan and implementing procedures establish a process to turn over responsibility for emergency response and mitigation to the site's ERO?
- Does the facility become a part of the site's ERO?
- Do procedures establish clear roles and responsibilities for site response organizations; particularly in relation to operation of nuclear facilities?

Operations/Communications Center

- Are procedures and checklists available to implement the roles and responsibilities?
- Do the procedures/checklists accurately implement the roles and responsibilities described in the emergency plan(s)?
- Is an individual trained to recognize, categorize and classify events and to conduct appropriate notifications available 24 hours a day, 7 days a week? Is this individual's authority unambiguous and clearly communicated throughout the ERO?

Incident Command/Incident Scene

- Do the emergency plan and EPIPs define the ERO expansion to include a NIMS-defined incident complex involving multiple facilities within an area, assigned to a single IC, and managed under a single incident command system?
- Do the emergency plan and EPIPs define the ERO expansion to include a NIMS-defined area command that would be anticipated with a catastrophic event affecting multiple areas within the site and the surrounding community and overwhelming the capabilities of the site and the surrounding offsite mutual aid organizations (e.g., a major ice storm or earthquake with a GE)?
- Is the ICS identified in the emergency plan and memoranda of understanding/agreement with local response organizations?
- Is the ICS organized in the five major functional areas of NIMS, i.e., Command, Operations, Planning, Logistics, and Finances and Administration?
- Is the ICS identified in the emergency plan and memoranda of understanding/agreement with local response organizations?
- Are procedures and checklists available to implement the roles and responsibilities?
- Do the procedures/checklists accurately implement the roles and responsibilities described in the emergency plan(s)?
- Do emergency facilities, equipment, personnel, and implemented methods and criteria provide effective decontamination of personnel and equipment for various levels and types of contamination (e.g., skin contamination)?
- Are reentry activities performed safely and efficiently, with specific team composition (e.g., minimum of one medically trained member) and equipment that accomplishes the mission?
- Did backup personnel stand by with equipment ready to provide assistance or rescue?
- Did advanced first aid support personnel, as a minimum, stand by with medical equipment and transport capability? [29 CFR 1910.120 (q)(3)(vi)]

Fire & Rescue

- Is emergency response sufficiently described in the fire protection program documentation? (DOE O 4201.C)

- Has the fire protection program been submitted to and approved by the Field Element? (DOE O 4201.C)
- Are written fire protection procedures established?
  - Site-specific requirements?
  - Staff organization, resources and training? (DOE O 4201.C)
- Has a Baseline Needs Assessment (BNA) established the capabilities to?
  - Effectively extinguish fires?
  - Provide emergency medical, rescue and hazardous materials response?
  - Provide staffing, apparatus, facilities, equipment, training, pre-incident plans, mutual aid, and procedures? (DOE O 4201.C)
- Has the BNA been incorporated in the site emergency plans? (DOE O 4201.C)
- Are pre-incident strategies, plans, and standard operating procedures established? (DOE O 4201.C)
- Are moderator controls addressed when appropriate? (DOE O 4201.C)
- Are physical access and appropriate equipment provided for effective manual firefighting intervention? (DOE O 4201.C)
- Are procedures and checklists available to implement the roles and responsibilities?
- Do the procedures/checklists accurately implement the roles and responsibilities described in the emergency plan(s)?

Security

- Are procedures and checklists available to implement the roles and responsibilities?
- Do the procedures/checklists accurately implement the roles and responsibilities described in the emergency plan(s)?
- Are security and law enforcement measures implemented during a physical attack that impact worker and responder access and egress (e.g., lockdown) coordinated through the ERO?
- Are security procedures of protective forces for carrying out responsibilities during response to OEs in place?
- Is common protocol for local law enforcement backup of the onsite security force established? (e.g., use of deadly force, weapons employment, tactics, code words, radio frequencies, etc.)

Field Teams/Field Monitoring

- Is sufficient staffing and equipment available to activate designated monitoring locations?
- Are procedures and checklists available to implement the roles and responsibilities?
- Do the procedures/checklists accurately implement the roles and responsibilities described in the emergency plan(s)?
- Where actions are outside of the normal job duties, are the procedures/checklists adequately detailed to provide for effective implementation?
- Is the field equipment within its calibration due date?

Emergency Operations Center – Emergency Management Team

- Is an ED or equivalently titled individual in charge of the overall response, with authority to use necessary resources to mitigate the emergency?
- Does the ED have authority and responsibility to perform required functions, including initial activation of onsite response assets, notification of offsite authorities, and requests for offsite assistance, in accordance with the NRP and the NIMS?

- Is the order of succession of management personnel responsible for managing the emergency in the absence of the primary designated emergency director clearly designated/implemented?
- Are extended operations anticipated and planned for?
- Is reentry and approval of extended dose or exposure limits within the authority and responsibility of the Emergency Director?
- Are procedures and checklists available to implement the roles and responsibilities of each of the positions?
- Do the procedures/checklists accurately implement the roles and responsibilities described in the emergency plan(s)?
- Is equipment available in adequate numbers and in good operating condition?

Support Functions

- Are procedures and checklists available to implement the roles and responsibilities of the each of the support functions?
- Do the procedures/checklists accurately implement the roles and responsibilities described in the emergency plan(s)?
- Where response actions are outside of the normal job duties, are the procedures/checklists adequately detailed to provide for effective implementation?

Offsite Interface

- Does the site have up-to-date MOUs/MOAs establishing protocols for event response and coordination, including information sharing and PARs?
- Do site procedures accurately reflect the roles, responsibilities, and implementing steps for the MOUs/MOAs and emergency plan (for offsite response and coordination)?

Good Practice

- Are critical task completion times established and results are used by other members of ERO?
- Is there a cross-functional flowchart which defines information flow across organizational boundaries for the first hour of an event?
- Is there a matrix with responsibilities defined for key event information such as: human resource manager responsible for patient tracking and next of kin notification, technical team manager responsible for plume model posting and briefings, and operations team manager responsible for refining source term?

REVIEW APPROACH

Record Review:
- Review the emergency plan.
- Review EPIPs.
- Review personnel training and qualification records and ERO roster.

Interviews:
- Selected ERO personnel.
- Training manager.
- Emergency manager.
- Plans and Procedures manager.

Observations:

- Training and drills.
- Limited-Scope Performance Tests.
- Dynamic Analysis Exercise.
- Exercises.

4.4 Emergency Operations System

OBJECTIVES

EOS.1: An Emergency Operations System (EOS) provides centralized collection, validation, analysis and coordination of information related to an emergency. The EOS supports on-scene response during an escalating incident by relieving the burden of site-level and external communication and securing additional resources needed for the response. It does not provide tactical direction to the IC in the field. This can be satisfied through an established EOC.

CRITERIA

1. *DOE sites/facilities/activities must have an EOS to provide centralized collection, validation, analysis and coordination of information related to an emergency.* (DOE Order 151.1D, Attachment 3, Paragraph 4)
2. *DOE sites/facilities/activities must accomplish the following. Establish an EOS to provide strategic management, operational support, planning/intelligence, logistics and finance/administration.* (DOE Order 151.1D, Attachment 3, Paragraph 4.a)
3. *The EOS must be able to perform the following capabilities.*

   (1) Establish and maintain an overall responsibility for supporting and coordinating the response to an emergency.
   (2) Use the basic NIMS/ICS concepts of common terminology, management unity and delegation of authority, managing by objectives, manageable span of control, and action planning.
   (3) Activate for any declared Operational Emergency impacting the DOE site/facility/activity.
   (4) Be scaled to the level of activation based on the severity of the incident. Staffing and functions must be performed as identified in the emergency management plan.
   (5) Provide support to the IC and have the ability to maintain support status under emergency conditions for an extended period based upon the All-Hazards Survey.

(DOE Order 151.1D, Attachment 3, Paragraph 4.b)

4. *The Emergency Operations System must be able to perform the following capabilities. Use standard operating procedures and checklists to –*

   (a) activate the Emergency Operations System, identify and notify staff, make it operational, and deactivate it;
   (b) establish communications and coordination with incident command;
   (c) obtain and maintain situational awareness and disseminate a Common Operating Picture among response components and external partners, as applicable; and
   (d) develop plans to support –
      1 operations by defining overall priorities;
      2 establishing operational objectives;

3 establishing personnel accountability; and
4 establishing the Operational Period for the ERO staffing shift changes.

(DOE Order 151.1D, Attachment 3, Paragraph 4.b.6)

Performance

During a performance demonstration –

- Did the site implement a "lead-event contractor" concept of operations?
- Were roles and responsibilities of lead and event contractor defined and implemented in accordance with the emergency plan and procedures?
- Did the integrated emergency response command media effectively flow down requirements to joint or contractor-specific plans and procedures?
- Did event contractor(s) adequately support incident command and site response, including support of event classification, worker protection, mitigation, and technical support?
- Were lead contractor line and staff organization operating procedures effectively integrated for a seamless transition from an abnormal event to an emergency response?
- Were the procedures executed according to the response structure described in the site/facility emergency plan?
- Did the emergency plan implementing procedures, checklists, job aids, etc. lead to an integrated, effective response by the ERO?
- Did the EPIPs, checklists, job aids, etc. provide for a complete response to the event?
- Are procedures and/or checklists describing response activities of the ERO members effectively used – and completed?
- Is the use of acronyms, code words, convention and technical terminology addressed to ensure no misunderstandings related to response and associated data?
- Were offsite agencies engaged and integrated into the response as described in the emergency plan, MOAs, MOUs, and procedures?
- Is information accurately and efficiently transmitted in an orderly and documented manner throughout the chain of command and between/within emergency facilities, as described in the emergency plan?
- Do specialty groups supporting the response staff provide timely information to the decision-making process?
- Is information collected at a central location?
- Is the information validated for accuracy prior to being posted or disseminated throughout the ERO (e.g., posted to WebEOC)?
- Is adequate data obtained and analyzed to support operations staff in assessing and mitigating emergency incidents?
- Is analysis data posted or disseminated in a timely manner throughout the ERO?
- Was information coordinated and disseminated so that response elements had the correct information in a timely manner to execute their response actions?
- Are periodic briefings provided on status of the emergency and current significant response priorities and activities?
- Is the division of authority and responsibility between the incident commander and emergency director positions clearly established and maintained during the event?
- Did the ED and support staff provide effective strategic management of the event away from the event scene?

- Did the ED and support staff identify needed response assets (or respond to requests from the incident scene) and obtain those assets for the IC in a timely manner?
- Did the ED and support staff respond in a timely, accurate manner to requests for information or analysis (such as updated consequence assessments or field monitoring results) by the IC?
- Did the ERO away from the incident scene provide
- Does the fully staffed ERO establish effective internal and external interfaces with other agencies and organizations? External interfaces may include: local, state, tribal and Federal agencies, and non-governmental groups such as concerned citizens and the media.
- Did the EOS relieve some of the burdens of responders in the field without providing specific direction to the on-scene response?
- Does ERO management effectively coordinate state and DOE site requests for use of DOE/NNSA assets?
- Is a liaison assigned to personnel representing DOE/NNSA assets involved in response to coordinate logistics, ensure that effective communications are initiated and maintained, and ensure that data exchanged using consistent units of measure?
- Did the ED establish appropriate priorities and tasking for the ERO (away from the IC) to ensure that the IC response was adequately supported?
- Does the responsible ERO operations and technical support staffs determine and implement a reasonable, well-planned course of action within their sphere of responsibility, based on current knowledge of the situation?
- Are tasks made to emergency response staff clear, priority actions identified, and are actions followed through to completion?
- Is EOS activation based on actual or potential emergency conditions?
- Is the ERO functionally staffed and activated in a timely manner?
- Are key emergency response facilities operational within an hour after declaration of an operational emergency?
- Is staffing of ERO positions following declaration of an operational emergency orderly, controlled and verifiable:
  - Do personnel gain access to response stations without impediment?
  - Are non-ERO personnel excluded from emergency response work areas?
  - Are individuals in key response positions readily identifiable by other ERO staff?
- Was the level of activation appropriately scaled to the severity of the event?
- Was the level of staffing as determined and described in the emergency plan?
- Did the ERO personnel plan appropriately for an extended period of operations, if necessary?
- Are communications established and maintained as described in the emergency or communications plan?
  - Between the IC and EOC?
  - Between/among response components (such as, fire & rescue, security, HAZMAT operations, and radiation protection personnel)?
  - Between the facility and IC?
  - Between the facility and EOC?
  - Between the EOC and offsite agencies?
- Is effective coordination between and among response components established and maintained (as described in the emergency or communications plan)?
  - Between the IC and EOC?
  - Between/among response elements (such as, fire & rescue, security, HAZMAT operations, and radiation protection personnel)?
  - Between the facility and IC?
  - Between the facility and EOC?
  - Between the EOC and offsite agencies?

- Does this coordination effectively support the IC in responding to the event?
- Does this coordination result in the effective protection of workers and the public from exposure to hazardous materials?
- Are communications maintained with and is information provided regularly to DOE HQ emergency management team?
- Is the information gathering, analysis and dissemination effective in establishing an accurate awareness of the situation and a common understanding of the response to the hazardous material release among all the response components?
- Was accurate information posted on the electronic information sharing system(s)?
- Was electronic information available to all response components? If not, did the ERO ensure that those components without electronic information sharing capability were apprised of the same information as the other response components?
- Was information provide to all response components in a timely manner?
- Was full, accurate information provided in notifications? To workers? Local agencies? Public? HQ organizations?

Programmatic LOIs

Centralized System

- Do the emergency plan and implementing procedures establish a system for centralized collection, validation, analysis, and coordination (dissemination) of emergency information?
- Does the EOS provide for overall support and coordination of emergency response?
- Is the EOS based on basic NIMS/ICS concepts?
- Does this system address each of the response elements and locations necessary to implement an effective response?
- Do procedures and checklists adequately address the implementation of the EOS?
- Are roles, responsibilities, and actions clearly established?
- Do the emergency plan and implementing procedures establish a system for strategic management of the response, with support for the IC and implementation of actions away from the scene?
- Does the EOS provide for central control of operational support, planning, logistics, and finance for the overall response (relieving the IC of this responsibility)?
- Does the contractor at DOE/NNSA Operational Emergency Hazardous Material Program facilities establish and maintain an ERO for each site/facility with overall responsibility for the initial and ongoing response to and mitigation of an emergency?
- Does the management structure of the response provide for collecting and disseminating accurate data, setting priorities, assigning work to functional groups, and keeping key emergency response staff abreast of emergency response status?
- Is an Emergency Director or equivalently titled individual in charge of the overall response, with authority to use necessary resources to mitigate the emergency?
- Does the Emergency Director have authority and responsibility to perform required functions, including initial activation of onsite response assets, notification of offsite authorities, and requests for offsite assistance, in accordance with the NRP and the NIMS?
- Is control of operations, monitoring and repair teams clearly vested in a single ERO position or clearly defined between multiple ERO positions?
- Is the emergency operations system designed to relieve some of the burdens of responders in the field without providing specific direction to the on-scene response?
- Do procedures provide appropriately for EOS activation for Operational Emergencies?
- Is the level of activation scaled to the severity of the event?

- Does the EOS provide priority support for the IC?
- Is the EOS designed to respond to all the emergency conditions analyzed in the EPHAs, including extended periods of operation when required?
- Does the system make use of the operational period concept for the ERO staffing shift changes?
- Are communication systems used to activate both on shift and off shift emergency response personnel?
- Does the site/facility ensure personnel availability for staffing ERO emergency positions and response teams is effectively accomplished?
    - Using a technique such as duty-cycle or static roster to ensure that qualified personnel are available on-demand and properly assigned?
    - Ensuring that sufficient trained personnel for initial and ongoing response, including designated alternates, are candidates for call-up in each functional area?
    - Periodically reviewing ERO rosters for accuracy?
    - Periodically reviewing and updating ERO personnel qualifications?
- Are initial response functions performed by on shift operations staff?
- Are operating procedures and checklists designed to?
    - Activate the EOS?
    - Establish communications and coordination with the IC?
    - Obtain and maintain situational awareness and a common operating picture?
    - Develop supporting plans?
- Does the EOS provide for completing personnel accountability in support of the IC?
- Does a communications plan establish the communication nodes, channels of communication, and information needs (for each node)?
- Are sufficient communication channels established to provide redundancy and timely communications, even with high volumes of traffic?
- Are primary and backup channels identified?
- Are responsibilities for providing information (and specific recipients) established?
- If time is important, do the plan and procedures identify the required timeline?
- Are methods for validating information identified and implemented?

Good Practice

- Is an emergency information management system (e.g., EMInS or WebOC®) used to promote situational awareness and ensure the ERO maintains a common operating picture?

REVIEW APPROACH

Record Review:
- Review the emergency plan.
- Review EPIPs.
- Review ERO checklists
- Review equipment and facility operations procedures.
- Review emergency information management procedures.
- Review personnel training and qualification records and ERO roster.

Interviews:
- Conduct interviews of selected emergency management and ERO personnel.

Observations:

- Training and drills.
- Limited-Scope Performance Tests.
- Exercises.
- Selectively walk down site/facility/activity, as necessary.

4.5 Training and Drills

OBJECTIVES

T&D.1: A comprehensive, coordinated, and documented program of training and drills must be an integral part of the emergency program to ensure that preparedness activities for establishing and maintaining program-specific emergency response capabilities are accomplished.

T&D.2: In addition to the training and drill requirements contained in Attachment 3, DOE sites/facilities/activities with an Emergency Management Hazardous Materials Program must also maintain a training and drill program that includes additional capability based upon the results of the EPHAs.

T&D.3: Each Defense Nuclear Facility must conduct drills, using a graded approach, involving the Operations staff, EM staff, onsite Incident Command staff, and EOC staff.

CRITERIA

DOE sites/facilities/activities must:

1. *Document and provide training to workers on hazards and protective actions they may be expected to take in accordance with the all-hazards planning basis. For those workers who are likely to witness a hazardous material release, the training must include notification of the release to proper authorities. (DOE Order 151.1D, Attachment 3, Paragraph 5.a.(1))*
2. *This training must be provided and documented initially and when there are changes affecting worker actions or responsibilities, and refresher training must be provided biennially. If a protective action is performed successfully during a drill, exercise, or actual event, the annual training requirement is met for that protective action. (DOE Order 151.1D, Attachment 3, Paragraph 5.a.(2))*
3. *Provide information on protective actions to visitors who have unescorted access. (DOE Order 151.1D, Attachment 3, Paragraph 5.a.(3))*
4. *Determine based upon the all hazards planning basis if additional training must be provided to workers to address response actions that may be necessary for severe events with regional impacts when the site/facility/activity may be isolated from offsite response assistance and infrastructure support. (DOE Order 151.1D, Attachment 3, Paragraph 5.a.(4))*
5. *DOE sites/facilities/activities must: Determine based upon the results of the all hazards planning basis if additional training must be provided to workers at specific facilities.* (DOE Order 151.1D, Attachment 3, Paragraph 5.a.(5))
6. *Conduct building evacuation drills at least annually, or consistent with frequency in applicable NFPA standards, and state or local regulations.* (DOE Order 151.1D, Attachment 3, Paragraph 5.d.(1))
7. *Evacuation drills must also be conducted after substantial changes are made to a building that change evacuation procedures/pathways.* (DOE Order 151.1D, Attachment 3, Paragraph 5.d.(1))

8. *Based upon the results of the all hazards planning basis, determine if additional drills and the frequency of such drills should be conducted for other protective actions that workers may be expected to take.* (DOE Order 151.1D, Attachment 3, Paragraph 5.d.(2))
9. *DOE sites/facilities/activities must: Develop a training and qualification program to establish and maintain specific emergency response capabilities as determined by the all hazards planning basis. Document the training requirements to include the courses, method of instructions, frequency, and intended audience. Assess ERO member's proficiency at least annually.* (DOE Order 151.1D, Attachment 3, Paragraph 5.b.(1))
10. *ERO training must be provided initially and when there are significant changes to expected emergency response capabilities. Refresher training must be provided no less than annually.* (DOE Order 151.1D, Attachment 3, Paragraph 5.b.(2))
11. *Initial Training for ERO members must include –*
    1 the applicable principles of ICS 100, Introduction to ICS, and ICS 700, NIMS, An Introduction;
    2 site/facility/activity-specific emergency response concept of operations (as documented in the emergency management plan), as applicable to each position; and
    3 position-specific roles and responsibilities to include plans, procedures, job aids, and associated equipment and systems.

(DOE Order 151.1D, Attachment 3, Paragraph 5.b.(3)(a))

12. *Refresher training must include –*

    1 lessons learned;
    2 best practices; and
    3 identified gaps or deficiencies on individual training.

(DOE Order 151.1D, Attachment 3, Paragraph 5.b.(3)(b))

13. *Conduct and document drills so that each ERO member participates at least annually.* (DOE Order 151.1D, Attachment 3, Paragraph 5.e.(1))
14. *Capture improvements and lessons learned to make program improvements to training and drills.* (DOE Order 151.1D, Attachment 3, Paragraph 5.e.(2))
15. *Use drill scenarios that are representative of the hazards/threats identified in the all-hazards planning basis.* (DOE Order 151.1D, Attachment 3, Paragraph 5.e.(3))
16. *The training and drills program must –*

    (1) consist of self-study, classroom training, or drills;
    (2) include training on EPHAs and EALs to appropriate ERO members; and
    (3) consist of emergency categorization and classification training to those personnel who perform this function.

(DOE Order 151.1D, Attachment 4, Paragraph 5.a)

17. *Develop and conduct drills determined to be needed to supplement exercises for ERO activities involving hazardous materials releases based upon the EPHAs.* (DOE Order 151.1D, Attachment 4, Paragraph 5.b)
18. *The training and drills programs must make training available on unique hazards, as appropriate, to emergency responders, both primary and mutual aid. This may include equipment, hazardous materials identified in the EPHA, or facility configuration.* (DOE Order 151.1D, Attachment 4, Paragraph 5.c)

19. *DOE sites/facilities/activities must: Offer orientation on the site/facility/activity-specific conditions and hazards based on the results of the all hazards planning basis, including familiarization, on an annual basis for any emergency responders.* (DOE Order 151.1D, Attachment 3, Paragraph 5.c)
20. *DOE sites/facilities/activities must: Formally invite applicable offsite first responders (e.g., primary first response agencies) to participate in a relevant drill or exercise at least annually.* (DOE Order 151.1D, Attachment 3, Paragraph 5.f)
21. *The training and drills programs must make training available on unique hazards, as appropriate, to emergency responders, both primary and mutual aid. This may include equipment, hazardous materials identified in the EPHA, or facility configuration.* (DOE Order 151.1D, Attachment 4, Paragraph 5.c)
22. *In developing the Drills and Training program each Defense Nuclear Facility must consider:*

    (1) elements of the EOC staff for Operational Emergencies;
    (2) drill scenarios that are representative of the hazards/threats identified in the all-hazards planning basis;
    (3) annual drills integrating the ERO with conduct of operations drills as initiating events;
    (4) evaluations of drill design and content, to include participants, for continuous improvement regardless of the scope or mechanism; and
    (5) rotation of shifts involved in the drill, and include unannounced drills, as well as drills during low staffing levels.

(DOE Order 151.1D, Attachment 4, Paragraph 5.d)

Performance-based LOIs

Worker/ERO Training

During initial or refresher training for workers or ERO members –

- Is training sequenced effectively to provide completion of prerequisite knowledge and skills prior to receiving training on more advanced knowledge and skills? (DOE-STD-1070-94, Appendix, Objectives and Criteria)
- Is the setting and location of the training conducive to learning?
- Is the instructor qualified (both technically and as an instructor) to teach the class? (DOE-STD-1070-94, Appendix, Objectives and Criteria)
- Does the instructor have a prepared lesson plan with an overall terminal and learning objections?
- Is the lesson plan current and approved? (DOE-STD-1070-94, Appendix, Objectives and Criteria)
- Is the lesson plan detailed enough to ensure repeatability by a different instructor?
- Did the instructor go over the objectives at the beginning and at the end of the training?
- Are the students engaged and interested in the training?
- Does the instructor use general and directed questions to keep the students engaged?
- Does the instructor evaluate the mastering of the terminal objective at the end of the training either with verbal or written questions or job performance measure? (DOE-STD-1070-94, Appendix, Objectives and Criteria)
- Are the evaluations based on the learning objectives in the lesson plan? (DOE-STD-1070-94, Appendix, Objectives and Criteria)
- Is the content of the evaluations changed frequently enough to prevent compromise? (DOE-STD-1070-94, Appendix, Objectives and Criteria)

- Are the students given an opportunity to provide feedback on the training either immediately following the training or within a realizable time following the training?
- Did a member of management evaluate the instructor and quality of the training?

Drills

During initial or refresher training drills for workers or ERO members –

- Is the setting and location of the training drill conducive to learning?
- Is the instructor formally qualified (both technically and as an instructor) to teach the drill?
- Does the instructor have a prepared lesson plan with overall terminal and learning objectives?
- Is the lesson plan detailed enough to ensure repeatability by a different instructor?
- Did the instructor go over the objectives at the beginning and end of the drill?
- Does the drill allow for all the participants to receive "hands-on" training? (DOE-STD-1070-94, Appendix, Objectives and Criteria)
- Does the training replicate the actual job conditions (to the extent practical) and allow for direct participation by all trainees? (DOE-STD-1070-94, Appendix, Objectives and Criteria)
- Did the drill include practice with the references, tools, and equipment that would be used during a response? (DOE-STD-1070-94, Appendix, Objectives and Criteria)
- Did the drill replicate the conditions of task performance that reflect actual emergency response conditions (to the extent practical)? (DOE-STD-1070-94, Appendix, Objectives and Criteria)
- Are the ERO teams and agencies external to the drill adequately simulated?
- Is the drill scenario representative of the hazards/threats identified in the EPHA?
- Does the instructor assist the students when they are struggling and are unable to perform the task?
- Does the instructor evaluate the mastering of the terminal objective at the end of the training either with verbal or written questions or job performance measure? (DOE-STD-1070-94, Appendix, Objectives and Criteria)
- Did the evaluation of the trainees' knowledge include actual task performance on the actual equipment, whenever possible? (DOE-STD-1070-94, Appendix, Objectives and Criteria)
- Are established standards used to evaluate trainee performance? (DOE-STD-1070-94, Appendix, Objectives and Criteria)
- Are the evaluations based on the learning objectives in the lesson plan? (DOE-STD-1070-94, Appendix, Objectives and Criteria)
- Are the students given an opportunity to provide feedback on the training either immediately following the training or within a realizable time following the training?
- Did a member of management evaluate instructor and the quality of the drill?

Worker Training and Drills

- Did workers demonstrate their understanding of their roles and responsibilities for response to emergencies during exercises, LSPTs, and other performance activities?
- Has the site completed the scheduled building evacuation drills - for each building on site at least annually?
- Has the site conducted a building evacuation drill after substantial changes to a building?

ERO Training and Drills

- Do all personnel assigned to facility and site level ERO positions demonstrate their proficiency in assigned positions through periodic participation in an exercise, an evaluated drill, or an actual response?
- Do all primary and alternate personnel accomplish this participation on a rotating basis?
- Is ERO member proficiency assessed at least annually for each of the positions for which an individual is qualified?
- What is the method of determining proficiency? Written exam or performance during an exercise or an evaluated drill or both?
- Is ERO refresher training completed at least annually for all ERO members?

ERO Training and Drills for Hazardous Material Programs (Attachment 4)

- Did all personnel assigned to facility- and site-level ERO positions demonstrate their proficiency during exercises, LSPTs, and other proficiency based activities?
- Are training drills realistic as possible, using realistic scenarios based on hazards surveys and EPHAs as well as actual facility conditions? (EMG 151.1D-1.3)

Offsite Agencies

- Did offsite agency personnel demonstrate their understanding of their roles and responsibilities for response to emergencies during exercises, LSPTs, and other proficiency based activities?
- Does the site offer orientation on site/facility/activity-specific conditions and hazards on an annual basis to local, county, and state emergency responders?
- Does the site formally invite offsite first responders to participate in drills and exercises at least annually?
- Does the MOU with offsite agencies identify the type of training needed? (EMG 151.1D-1.3)

DNFs

- Does the site conduct drills that involve the Operational staff, Emergency Management staff, onsite Incident Command staff, and EOC staff?
- Does the site rotate which shifts conduct the drills and include unannounced drills and drills during low staffing levels?

Programmatic LOIs

Worker Training

- Does the site provide initial training to workers on hazards and protective actions they may be required to take?
- Is the training completed when they are initially employed, when their expected actions and responsibilities change, or when the emergency plan changes? (Also required by 29 CFR 1910.38 (f)
- For those workers likely to witness a hazardous material release, does the training include how to notify proper authorities in the case of an emergency?
- Is refresher training on this initial training completed every two years?
- For visitors with unescorted access, does the site provide training on protective actions?
- Has the site conducted a training needs analysis based on the EPHA and EALs - whether additional training must be provided to workers to address response actions that may be necessary for severe

events with regional impacts when the site/facility/activity may be isolated from offsite response assistance and infrastructure support?

- If the analysis determined this training is needed, does it include self-help strategies such as first aid and the location of onsite medical and life sustaining supplies and procedures for all identified protective actions?
- Has the site conducted an analysis based on the EPHA whether additional training must be provided to workers at specific facilities?
- If the analysis determined this training is needed, does it include facility-specific procedures for safe shutdown/walk-away provisions and/or facility-specific response steps to take when there are disruptions to critical infrastructure?
- Are employees designated and trained to assist in a safe and orderly evacuation of other employees? (29 CFR 1910.38 (e))
- Are first responders identified and trained at the awareness level, in accordance with 29 CFR 1910.120 (q)(6)(i), as appropriate? Note: First responders at the awareness level are individuals who are likely to witness or discover a hazardous substance release and who have been trained to initiate an emergency response sequence by notifying the proper authorities of the release. They would take no further action beyond notifying the authorities of the release. First responders at the awareness level shall have sufficient training or have had sufficient experience to objectively demonstrate competency in the following areas:
  - An understanding of what hazardous substances are, and the risks associated with them in an incident.
  - An understanding of the potential outcomes associated with an emergency created when hazardous substances are present.
  - The ability to recognize the presence of hazardous substances in an emergency.
  - The ability to identify the hazardous substances, if possible.
  - An understanding of the role of the first responder awareness individual in the emergency response plan.
  - The ability to realize the need for additional resources, and to make appropriate notifications to the communication center.
- Are first responders identified and trained at the operations level, in accordance with 29 CFR 1910.120 (q)(6)(ii), as appropriate? Note: First responders at the operations level are individuals who respond to releases or potential releases of hazardous substances as part of the initial response to the site for the purpose of protecting nearby persons, property, or the environment from the effects of the release. They are trained to respond in a defensive fashion without actually trying to stop the release. Their function is to contain the release from a safe distance, keep it from spreading, and prevent exposures. First responders at the operational level shall have received at least eight hours of training or have had sufficient experience to objectively demonstrate competency in the following areas in addition to those listed for the awareness level:
  - Knowledge of the basic hazard and risk assessment techniques.
  - Know how to select and use proper personal protective equipment provided to the first responder operational level.
  - An understanding of basic hazardous materials terms.
  - Know how to perform basic control, containment and/or confinement operations within the capabilities of the resources and personal protective equipment available with their unit.
  - Know how to implement basic decontamination procedures.
  - An understanding of the relevant standard operating procedures and termination procedures.
- Do workers at hazard category 1, 2, and 3 nuclear facilities receive general employee training that includes facility emergency plans? (DOE O 426.2, Attachment 1, Section 4.b.(1))
- Do managers at hazard category 1, 2, and 3 nuclear facilities receive training that includes facility emergency plans? (DOE O 426.2, Attachment 1, Section 4.b.(5))

- Do certified operators and supervisors at hazard category 1, 2, and 3 nuclear facilities receive continuing training that includes emergency procedures, facility emergency plans? (DOE O 426.2, Attachment 1, Section 8)

Worker Drills

- Does the site schedule building evacuation drills for each building on site at least annually?
- Is there a state or local code that requires more frequency building evacuation drills? If so, does the site follow these more restrictive requirements?
- Does the site require a building evacuation drill after substantial changes to a building?
- Has the site conducted an analysis based on the EPHA to determine whether additional drills and the frequency of such drills should be conducted for other protective actions that workers may be expected to take?

ERO Training

- Are fully trained personnel assigned to facility and site level ERO positions to ensure adequate staffing for emergency response?
- Has the site developed a training and qualification program for ERO members which establishes and maintains specific emergency response capabilities as determined by the EPHA?
- Does the training program documentation include courses, method of instruction, frequency and intended audience?
- Are entry-level requirements established for each position? (DOE-STD-1070-94, Appendix, Objectives and Criteria)
- Does initial ERO training require the completion of ICS-100 and ICS-700? If not, does the initial training include the applicable principles of ICS-100 and ICS-700:
    - From ICS-100, the ICS principles are: unity of command, common terminology, management by objective, flexibility and modular organization, span of control, coordination, IAP, comprehensive resource management, and integrated communications.
    - From ICS-700, the NIMS principles are: flexibility, standardization, and unity of effort.
- Does initial ERO training include site/facility/activity-specific emergency response concept of operations (as documented in the emergency management plan) applicable to each position?
- Does initial ERO training include position-specific roles and responsibilities to include plans, procedures, job aids, and associated equipment and systems?
- Is ERO refresher training scheduled at least annually for all ERO members?
- Does refresher training include lessons learned and best practices?
- Does refresher training for individuals include gaps or deficiencies identified for that individual?
- Is ERO training provided to members when significant changes to responsibilities, tasks, or expected response capabilities occur?

ERO Drills

- Is there documentation that each member of the ERO has participated in a drill, exercise, or actual incident annually?
- Does the site evaluate drills for improvements and lessons learned which can be applied to improving the drill and training program?
- Are drill scenarios representative of the hazards/threats identified in the EPHA?

ERO Training and Drills for Hazardous Material Programs (Attachment 4)

- Does the ERO training program consist of self-study, classroom training, or drills?
- Does the ERO training program include training on the EPHA and EALs for the following ERO members:
  - All consequence assessment team members?
  - Individuals responsible for determining categorization and classification and determining protective actions?
  - Emergency Directors?
- Does the ERO training program require categorization and classification training for personnel who perform this function?
- Has the site conducted an analysis of the drills needed to supplement exercises for ERO activities involving hazardous materials releases based upon the EPHA? Does the site conduct additional drills based on this analysis?
- Does the site provide training and drills on unique hazards to both primary and mutual aid responders?
- Has the site developed a formal training plan that describes program goals and objectives, organizational responsibilities, resources, and planned activities. (EMG 151.1D-1.3)
- Does the site conduct an annual internal assessment of the ERO training and drill program to identify improvements? (EMG 151.1D-1.3)
- Does the site have a list of requirements and a trainer/instructor qualifications program based on instructional skill and technical knowledge and experience? (EMG 151.1D-1.3)
- Does management conduct an internal review of the training staff as part of the annual internal assessment? (EMG 151.1D-1.3)
- Does the qualification of an ERO member include the annual participation in at least one drill or exercise? (EMG 151.1D-1.3)
- Is the performance of an individual during a training drill evaluated by the trainer/instructor using a written performance checklist? (EMG 151.1D-1.3)
- Are training drills realistic as possible, using realistic scenarios based on hazards surveys and EPHAs as well as actual facility conditions? (EMG 151.1D-1.3)
- Do hazard materials technician receive the required training in accordance with 29 CFR 1910.120 (q)(6)(iii)? Note: Hazardous materials technicians are individuals who respond to releases or potential releases for the purpose of stopping the release. They assume a more aggressive role than a first responder at the operations level in that they will approach the point of release in order to plug, patch or otherwise stop the release of a hazardous substance. Hazardous materials technicians shall have received at least 24 hours of training equal to the first responder operations level and in addition have competency in the following areas:
  - Know how to implement the emergency response plan.
  - Know the classification, identification and verification of known and unknown materials by using field survey instruments and equipment.
  - Be able to function within an assigned role in the ICS.
  - Know how to select and use proper specialized chemical personal protective equipment provided to the hazardous materials technician.
  - Understand hazard and risk assessment techniques.
  - Be able to perform advance control, containment, and/or confinement operations within the capabilities of the resources and personal protective equipment available with the unit.
  - Understand and implement decontamination procedures.
  - Understand termination procedures.
  - Understand basic chemical and toxicological terminology and behavior.

- Do hazard materials specialists (such as the Safety Officer) receive the required training in accordance with 29 CFR 1910.120 (q)(6)(iv)? Note: Hazardous materials specialists are individuals who respond with and provide support to hazardous materials technicians. Their duties parallel those of the hazardous materials technician, however, those duties require a more directed or specific knowledge of the various substances they may be called upon to contain. The hazardous materials specialist would also act as the site liaison with Federal, state, local and other government authorities in regards to site activities. Hazardous materials specialists shall have received at least 24 hours of training equal to the technician level and in addition have competency in the following areas:
  - Know how to implement the local emergency response plan.
  - Understand classification, identification and verification of known and unknown materials by using advanced survey instruments and equipment.
  - Know of the state emergency response plan.
  - Be able to select and use proper specialized chemical personal protective equipment provided to the hazardous materials specialist.
  - Understand in-depth hazard and risk techniques.
  - Be able to perform specialized control, containment, and/or confinement operations within the capabilities of the resources and personal protective equipment available.
  - Be able to determine and implement decontamination procedures.
  - Have the ability to develop a site safety and control plan.
  - Understand chemical, radiological and toxicological terminology and behavior.
- Is the on-scene Incident Commander qualified in accordance with 29 CFR 1910.120 (q)(6)(v)?
  - Incident commanders, who will assume control of the incident scene beyond the first responder awareness level, shall receive at least 24 hours of training equal to the first responder operations level
  - Know and be able to implement the site/facility ICS.
  - Know how to implement the emergency response plan.
  - Know and understand the hazards and risks associated with employees working in chemical protective clothing.
  - Know how to implement the local emergency response plan.
  - Knowledge of the state emergency response plan and of the Federal Regional Response Team.
  - Know and understand the importance of decontamination procedures.
- Do non-reactor nuclear facility operators have training on emergency procedures? (DOE O 426.2, Attachment 1, Section 6.a)

<u>Offsite Agencies</u>

- Did the site analyze the need for training for agencies that provide mutual aid?
- Does the MOU with offsite agencies identify the type of training needed? (EMG 151.1D-1.3)
- Is appropriate training provided to mutual aid responders?
- Does the site offer orientation on site/facility/activity-specific conditions and hazards on an annual basis to local, county, and state emergency responders?
- Does the site formally invite offsite first responders to participate in drills and exercises at least annually?

<u>Defense Nuclear Facilities</u>

- Does the site conduct drills that involve the Operational staff, Emergency Management staff, onsite Incident Command staff, and EOC staff?
- Does the training and drill program consider elements of the EOC staff for Operational Emergencies?
- Are the drill scenarios representative of the hazards/threats identified in the EPHA?

- Does the drill program integrate the conduct of operations drills as the initiating event into ERO drills?
- Does the site evaluate the drill design, content and performance of participants to improve the program?
- Does the site rotate which shifts conduct the drills and include unannounced drills and drills during low staffing levels?

Good Practice

- Has the training program for the ERO members been determined using the systematic approach to training? If so, does the training program include: (EMG 151.1D-1.3)
  - Needs, job and task analysis?
  - Task-to-Training matrix?
  - Documentation of analysis to determine training environment and methods?
  - Documentation in the form of an ERO training program document or similar documentation.
  - Periodic evaluation of the training program?

  See Handbook DOE-HDBK-1078-94 (Reaffirmed June 2014) for additional information on the systematic approach to training.

REVIEW APPROACH

Record Review:
- Review the facility/site emergency plan(s).
- Review the training plans and procedures.
- Review training schedules and records.
- Review drill package.
- Review training/drill program evaluation reports.

Interviews:
- Interview training personnel.
- Interview site/facility emergency management personnel.
- Interview site/facility ERO members.

Observations:
- Observe either an initial or refresher training session for workers or ERO members.
- Observe either an initial or refresher training drill for ERO members.
- Observe classroom training.
- Observe a drill.

4.6 Offsite Response Interface

OBJECTIVES

ORI.1: DOE sites/facilities/activities must establish and maintain interfaces with local, state, tribal, and Federal organizations responsible for emergency response or who may be used to supplement response capabilities based on threats/hazards identified in the all hazards planning basis to include planning for severe events.

CRITERIA

1. DOE sites/facilities/activities must accomplish the following activities with offsite response organizations.

a. See paragraphs 5c and 5f of this Attachment for information to be provided to offsite first responders.
b. Determine access protocols for routine, abnormal, and emergency conditions.
c. Establish a process for communications for use during onsite response.
d. Establish a process to coordinate emergency public information during an incident involving response by the offsite responder(s) for incidents that may affect or be of interest to the media and public. See paragraph 12.

(DOE Order 151.1D, Attachment 3, Paragraph 7)

2. In addition to the offsite interface requirements contained in Attachment 3, DOE sites/facilities/ activities with an Emergency Management Hazardous Materials Program must also coordinate with local, state, tribal, and Federal organizations.

a. Address protective actions recommended offsite based upon the results of EPHAs.
b. Determine a notification process to use during emergencies when protective actions may be recommended offsite.
c. Provide information from EPHA analyses to appropriate state and county agencies on bounding event scenario distance at which PAC would be exceeded and plume arrival times at specific offsite receptors, so that offsite organizations can make decisions regarding the appropriate level of preparedness and response.
d. For Emergency Management Hazardous Materials Program facilities with General Emergencies involving radiological material releases, ensure adequate planning for offsite radiological monitoring support to local and state governments.

(DOE Order 151.1D, Attachment 4, Paragraph 7)

Performance

During a performance demonstration –

- Are off-site agencies/organizations responsible for emergency response and for protection of workers and the public environment provided initial and ongoing information sufficient to perform their respective functions?
- Are offsite officials briefed following activation of their respective facilities?
- Does coordination and integration with off-site response agencies and organizations follow the established, prearranged and documented plans and protocols?
- Are appropriate protective action recommendations (PARs), based upon the results of EPHAs, provided to the responsible offsite authorities?
- Are public warning protocols implemented?
- Are established offsite monitoring and consequence assessments executed?
- Do communication capabilities allow effective communication with off-site officials, the cognizant DOE Field Element and Headquarters Emergency Management Team?
- Did the communication equipment provide the interoperability necessary for an effective response?
- Does timely, clear, accurate, and effective information exchange occur between the ERO and off-site personnel?

- Does mutual understanding of acronyms, code words, conventions and/or technical terminology provide effective information exchange?
- Are incoming off-site agency inquiries/concerns directed to the appropriate personnel for resolution?
- Are provisions with state, tribal and local agencies and organizations for coordinating release of information about the emergency to the public implemented?
- Was space allocated to offsite authorities (in the EOC, JIC, or other operational location as necessary) sufficient to support an integrated response?
- Has adequate support for offsite radiological monitoring been provided to local and state governments, as necessary?
- Did offsite support agencies demonstrate proficiency in executing their roles and responsibilities under the established MOAs/MOUs?
- For a postulated severe incident with regional impacts, did the site demonstrate an effective level of interoperability, integration, and interface with jurisdictional responders?

Programmatic LOIs

- Based on the EPHA, has the site/facility identified the offsite emergency services that might be required in an emergency (e.g., hospitals, fire departments, HAZMAT teams, law enforcement, ambulance services and suppliers)?
- Have organizations which may be needed in a supporting role and/or needed for long-term support been identified?
- Has the method for coordination and control of an emergency, within the NIMS structure, been established?
- Have predesignated off-site points of contact, including organization, names, and phone numbers been documented, maintained, and made available to the response organization?
- Do the agreements describe the actions of the parties for each type of categorized and classified emergency?
- Is space allocated in the EOC, JIC, or other operational location as necessary to support integrated response?
- Have communication protocols and contact points been established?
- Are public warning protocols established, described, and implemented?
- Is public information coordinated (in accordance with the plan and MOA/MOUs)?
- Are offsite monitoring and consequence assessment methods established?
- Is support requested, as required, from Federal, tribal, state and/or local response agencies and organizations responsible for augmenting site resources in response to an on-site emergency event?
- Have effective interfaces been established and maintained to ensure that emergency response activities are integrated and coordinated with the Federal, tribal, state, and local agencies and organizations responsible for emergency response and protection of the workers, public, and environment?
- Are local hospitals contracted to provide response to potential HAZMAT injuries (e.g., radiologically contaminated and injured individuals)?
- For sites with biological facilities, has the site established protocols with state and local public health authorities for response to events?
- Have offsite response agencies that provide first responders been included in the training and drill program (see requirements in Section 4.5)?
- Do procedures provide for offsite responder access to the site during normal, abnormal, and particularly, emergency conditions?
- Do procedures and protocols provide for effective communications with offsite responders during events?

- Does a mutual understanding of capabilities, especially command and control systems, support integrated and effective response?
- Does the communication equipment for both on-site and off-site responders provide the interoperability necessary for an effective response?
- Do communication capabilities allow effective communications with offsite officials, the field element and HQ?
- Are methods of communication and communication protocols with off-site agencies/organizations in place, identified and operable?
- Are provisions in place and implemented with state, tribal and local agencies and organizations for coordinating release of information about the emergency to the public?
- Do offsite responders and offsite response agencies coordinate public information with site personnel during an emergency? Is the coordination addressed in procedures?
- Does the contractor at the DOE/NNSA facility coordinate with state, tribal, and local agencies and organizations responsible for off-site emergency response (e.g., "911" emergencies) and for protection of the health and safety of the public?
- Are interfaces with tribal, state and/or local authorities responsible for protection of the public and the environment identified and established?
- Does coordination and integration with off-site response agencies and organizations follow established, prearranged and documented plans and protocols, including, responsibilities and authorities, coordination of response, notification, facility activation, communications, EOC interfaces, PIO activities, and logistic protocols?
- Does an effective working relationship exist between off-site officials and their ERO counterparts?
- Is the site/facility emergency response plan compatible and integrated with the disaster, fire and/or emergency response plans of local, state, and Federal agencies? [Title 29 CFR 1920.120, Hazardous Waste Operations and Emergency Response, (I)(3)(iii)]
- Does offsite response interface planning address protective action recommendations (PARs) based upon the results of EPHAs?
- Do the MOAs, MOUs, emergency plan, and implementing procedures establish a notification process to use during emergencies, when protective actions may be recommended offsite?
- Is there mutual understanding of response measures to be implemented by the facility/site in anticipation of the involvement of local and state public health agencies or agricultural authorities following an actual or potential release of a biological hazardous material?
- Has the site provided information from EPHA analyses to appropriate state and county agencies on bounding event scenario distance at which PAC would be exceeded and plume arrival times at specific offsite receptors, so that offsite organizations can make decisions regarding the appropriate level of preparedness and response?
- For Emergency Management Hazardous Materials Program facilities with General Emergencies involving radiological material releases, do the emergency plan, MOAs, MOUs, and implementing procedures ensure local and state governments have adequate support for offsite radiological monitoring support?
- Are off-site authorities informed of the availability of assistance from DOE or NNSA national assets (i.e., Radiological Assistance Program (RAP), Federal Radiological Monitoring and Assessment Center (FRMAC), National Atmospheric Release Advisory Center (NARAC), Aerial Measuring System (AMS), and Radiation Emergency Assistance Center / Training Center (REAC/TS))?
- Are plans and procedures in place to implement requests for support?
- Do subsequent requests for support result in activation of the applicable assets?
- Are planned response functions to be provided by off-site organizations periodically tested and verified?
- Are off-site response organizations invited to participate in a site-level exercise at least every 3 years?

- Is an individual(s) with appropriate authority, knowledge and training responsible for establishing and maintaining ongoing and effective interfaces with off-site political, technical, security and emergency services officials?
- Are agreements to provide mutual assistance to or to receive assistance from off-site organizations (e.g., local emergency responders, state emergency responders, state and local public health authorities, medical service providers, Local Emergency Planning Committee (LEPC), and Federal emergency responders) documented in formal MOAs or MOUs?
- Does the agreement with the off-site agency contain, at a minimum, the following information:
  - The specific service and/or resources to be provided
  - The agency, organization, or jurisdiction to which it applies
  - Onsite individuals authorized to request aid from the offsite agency, organization, or jurisdiction
  - Offsite individuals authorized to implement the arrangement, points-of-contact, and information required for implementation, such as names and telephone numbers
  - Specific responsibilities, authorities, and command structure
  - Any constraints/conditions that might preclude the agency, organization, or jurisdiction from meeting its obligation or support its refusal
  - Public information release protocols
  - Financial arrangements, including commitments by the facility or site to provide training, equipment, and facilities to the entity providing the service, and indemnification for injury to persons for loss and damage to property
  - Specified periodic re-examination of the provisions and a renewal or termination date
  - Signature of authorized individuals representing the site organizations and the offsite agency, organization, or jurisdiction
- Are MOAs or MOUs accessible in the emergency plan and maintained current through periodic reviews?
- Does the site provide a representative to a local emergency planning committee (for facilities subject to the requirements of SARA title III)? [Title 42, U.S. Code, The Public Health and Welfare, Chapter 116, Subchapter I, Emergency Planning and Notification, Section 11001, c]
- If the requirements apply, has the site/facility made the required notifications to the SERC and LEPC? [40 CFR 355.20]
- Has the facility appointed an emergency response coordinator who will work with the LEPC on developing and implementing the local emergency plan? [40 CFR 355.20(c)]
- Does routine coordination and interfaces through training, drills and good neighbor support ensure that off-site services as indicated in documented agreements will be integrated with on-site resources?
- Are off-site response agencies and organizations provided with specific information and/or offered training on the nature and characteristics of the HAZMAT present at the DOE/NNSA biosafety facility?
- Are off-site response agencies and organizations provided with specific information and/or offered training on the nature and characteristics of the biological agents and/or toxins present at the DOE/NNSA biosafety facility?
- Is effective coordination with off-site response agencies and organizations accomplished and maintained through routinely scheduled meetings?

Good Practice

- Does the site/facility, through formal agreements, support off-site agencies under the "good neighbor" policy in areas of emergency assistance including: fire, medical and Hazmat releases (including field monitoring resources)?
- Is liaison established with other organizations that may be involved in an emergency scenario (e.g., local business community, American Red Cross, college or university, or local school district)?

REVIEW APPROACH

Record Review:
- Review the emergency plan.
- Review MOUs, MOAs, and mutual aid agreements.
- Review EPIPs related to offsite interface, including those governing MOUs and MOAs, offsite training for responders and local officials, coordination of response, and communication.
- Review training, drill, and exercise records for offsite responders and authorities.

Interviews:
- Interview DOE/NNSA Field Element and contractor personnel responsible for establishing and maintaining interfaces with offsite authorities.
- Interview representatives of offsite organizations relied upon for coordination, mutual aid, emergency assistance, and implementing protective actions within the site's EPZ.

Observations:
- Training and drills.
- Limited-Scope Performance Tests.
- Exercises.

4.7 Emergency Categorization

OBJECTIVES

CAT.1: DOE sites/facilities must declare an Operational Emergency when incidents occur that represent a significant degradation in the level of safety at a site/facility resulting in potential health and safety hazards to workers or the public. (DOE Order 151.1D, Attachment 3, Paragraph 8.a)

CRITERIA

1. *Operational Emergencies must be categorized as promptly as possible, but no later than 15 minutes after identification by the predetermined decision maker for the categorization, in accordance with the emergency management plan, but no more than 30 minutes from initial discovery. Such incidents include the following:*
    a. *Health and Safety - The following incidents or conditions represent, cause, or have the potential to cause serious health and safety impacts to workers or members of the public.*
        i. *The discovery of radioactive or other hazardous material contamination from past DOE operations that may have caused, is causing, or may reasonably be expected to cause uncontrolled personnel exposures exceeding PAC.*
        ii. *An occurrence (e.g., earthquake, tornado, aircraft crash, fire, explosion, or incidents in table 3-1) that causes significant structural damage to DOE facilities, with confirmed or suspected personnel injury or death.*
        iii. *Any mass casualty incident, as determined and documented by the site.*
        iv. *A criticality event.*
        v. *An offsite hazardous material incident not associated with DOE operations that is observed to have, or is predicted to have, an impact onsite such that protective actions are required for DOE workers.*
    b. *Environment - The following incidents or conditions represent, cause, or have the potential to cause serious detrimental effects on the environment: Any actual or potential release of*

hazardous material or regulated pollutant to the environment that could result in significant offsite consequences, such as major wildlife kills, wetland degradation, aquifer contamination, or the need to secure downstream water supply intakes.

c. *Offsite DOE Transportation Activities - The following incidents or conditions represent an actual or potential release of hazardous materials from a DOE shipment: Any accident/incident involving an offsite DOE shipment containing hazardous materials that causes the initial responders to initiate protective actions at locations beyond the immediate/affected area.*
d. *Hazardous Biological Agent or Toxins - The following incidents or conditions involving the release of a hazardous biological agent or toxin [identified in 42 CFR Part 73, Select Agents and Toxins, 7 CFR Part 331, Possession, Use and Transfer of Select Agents and Toxins and 9 CFR Part 121, Possession, Use and Transfer of Select Agents and Toxins] represent major failure of safety systems, protocols, and/or practices with the potential to have a serious impact on health and safety of workers, collocated workers, emergency responders, members of the public, or the environment: Any actual or potential release of a hazardous biological agent or toxin outside of the secondary barriers of the biocontainment area.*
e. *Safeguards and Security - Security incidents are also subject to reporting in accordance with DOE O 470.4B, Administrative Change 1, Safeguards and Security Program or other directives as applicable. Per this Order, foreign involvement in security incidents must be reported to the Counterintelligence Directorate within the Office of Intelligence and Counterintelligence. The following incidents or conditions represent, cause, or have the potential to cause degradation of security or safeguards conditions with actual or potential direct harm to people or the environment. Security and Safeguard Operational Emergencies include:*
    i. *Unplanned detonation of an explosive device or a credible threat of detonation resulting from the location of a confirmed or suspected explosive device.*
    ii. *An actual terrorist attack, active threat (e.g., armed assault), cyber security incident that impacts critical infrastructure, or sabotage incident involving a DOE site/facility/activity.*
    iii. *Kidnapping or taking hostage(s) involving a DOE site/facility/activity.*

(DOE Order 151.1D, Attachment 3, Paragraph 8.b)

2. *Emergencies, once categorized, must not be downgraded to a lower significance category unless the original categorization was incorrect. In general, the emergency classification (i.e., Alert, Site Area Emergency, or General Emergency) should not be downgraded until termination of the event. However, emergency classification must be reviewed periodically to ensure the classification is commensurate with response activities.* (DOE Order 151.1D, Attachment 3, Paragraph 8.c)

CAT.2: In addition to the emergency categorization requirements contained in Attachment 3, DOE sites/facilities/activities with an Emergency Management Hazardous Material Program must also have provisions to classify incidents involving the actual or potential airborne release of (or loss of control over) hazardous materials from an onsite facility.

3. *In addition to the emergency categorization requirements contained in Attachment 3, DOE sites/facilities/activities with an Emergency Management Hazardous Material Program must also have provisions to classify incidents involving the actual or potential airborne release of (or loss of control over) hazardous materials from an onsite facility/activity as an Alert, Site Area Emergency, or General Emergency based on health effects parameters measured or estimated at 30 meters, 100 meters, and the site boundary and compared with the appropriate protective action criterion.* (DOE Order 151.1D, Attachment 4, Paragraph 8)
4. *Establish procedures to classify Operational Emergencies (as an Alert, Site Area Emergency, and General Emergency) based upon the appropriate PAC listed below.*

a. *For radioactive material, the PAGs promulgated by the EPA must be used.*
b. *For chemicals, the PAC, listed in order of preference, must be used: Acute Exposure Guideline Levels (AEGLs) (60-minute values/level 2) promulgated by the EPA; ERPGs (level 2 values) published by the American Industrial Hygiene Association; and TEELs (level 2 values) developed by DOE. A DOE specific PAC data set (including AEGLs, ERPGs, and TEELs), may be reference at https://sp.eota.energy.gov/pac/.*
c. *For hazardous biological materials and toxins identified in Attachment 3, PAC are considered exceeded and immediate protective actions are required for any actual or potential release of agents or toxins outside of secondary containment barriers. Long-term PAC are specified by State or local public health officials.*

(DOE Order 151.1D, Attachment 4, Paragraph 8.a)

5. *Classify as either an Alert, Site Area Emergency, or General Emergency, in order of increasing severity, when incidents occur that represent a specific threat to workers and the public due to the release or potential release of significant quantities of hazardous materials. Classification aids in the rapid communication of critical information and the initiation of appropriate time-urgent emergency response actions.*

   a. *Alert - An Alert must be declared when incidents are predicted, are in progress, or have occurred that result in an actual or credible threat of substantial degradation in the level of control over hazardous materials under one or more of the following situations.*
      i. *The radiation dose from any release to the environment of radioactive material or a concentration in air of hazardous chemical material is expected to exceed the applicable protective action criterion at or beyond 30 meters but not beyond 100 meters from the point of release or beyond the site boundary.*
      ii. *An actual or potential substantial degradation in the level of safety or security of a nuclear weapon, component, or test device at a fixed site/facility that would not pose an immediate threat to workers or the public.*
   b. *Site Area Emergency - A Site Area Emergency must be declared when incidents are predicted, in progress, or have occurred that result in an actual or credible threat of substantial degradation in the level of control over hazardous materials under one or more of the following situations.*
      i. *The radiation dose from any release of radioactive material or concentration in air from any release of other hazardous material is expected to exceed the applicable protective action criterion at or beyond 100 meters from the point of release but not at or beyond the site boundary.*
      ii. *An actual or potential threat to the integrity of a nuclear weapon, component, or test device that may adversely impact the health and safety of workers in the immediate area, but not the public.*
   c. *General Emergency - A General Emergency must be declared when incidents are predicted, in progress, or have occurred that result in an actual or credible threat of substantial degradation in the level of control over hazardous materials under one or more of the following situations.*
      i. *The radiation dose from any release of radioactive material or a concentration in air from any release of other hazardous chemical is expected to exceed the applicable protective action criterion at or beyond the site boundary.*
      ii. *Actual or likely catastrophic failures in safety or security systems threatening the integrity of a nuclear weapon, component, or test device that may adversely impact the health and safety of workers and the public.*

(DOE Order 151.1D, Attachment 4, Paragraph 8.b)

6. *Respond appropriately to each emergency classification level. Actions required for response to an Operational Emergency must be implemented. See Attachment 3, Section 4.*

   a. *Alert - Declaration of an Alert does not necessarily require the activation of response centers.*
   b. *Site Area Emergency. Declaration of a Site Area Emergency requires the same response as for an Alert plus notification and assembly of emergency response personnel and equipment to activate response centers and to establish communications, consultation, and liaison with offsite authorities.*
   c. *General Emergency - Declaration of General Emergency requires the same response as for a Site Area Emergency, plus the notification, mobilization, and dispatch of all appropriate emergency response personnel and equipment, including appropriate DOE emergency response assets, and liaison with offsite authorities for the recommendation of predetermined public protective actions.*

(DOE Order 151.1D, Attachment 4, Paragraph 8.c)

Performance

During a performance demonstration -

Categorization

- Is the authority for event categorization and classification clearly defined and demonstrated by ERO personnel?
- Does the designated individual for categorization make the determination?
- Are OE categorization criteria available to and used by decision-makers?
- Do the categorization criteria lead to a correct categorization?
- Is the categorization of abnormal events/conditions as OEs accomplished promptly and accurately (using site/facility-specific EALs)?
- Was the event categorized within 15 minutes after event recognition/identification/discovery ("after identification) by the predetermined decision maker?
- Was the event categorized no more than 30 minutes after initial discovery?
- Was an abnormal event/condition categorized as an OE and later downgraded because the original categorization was incorrect?

Classification

- Does the designated individual for classification make the determination?
- Did the facility classify the emergency event as promptly as possible, but no later than 15 minutes after identification by the predetermined decision-maker?
- Did the facility classify the emergency event as promptly as possible, but no later than 30 minutes from initial discovery?
- Are events classified on the basis of potential severity of consequences?
- Were the EALS used for classification clear, straightforward, usable, and unambiguous to the decision-maker?
- Is the classification of an OE involving the actual or potential airborne release of hazardous material based on the distance at which estimated consequences exceed PAC?
- Were EALs used to provide early recognition and anticipate potential/future consequences?
- Did classification involve using facility-specific EALs with readily available indications or observable conditions?

- Were discretionary EALs used by decision-makers to compensate for possible incompleteness?
- Did the facility appropriately classify emergency events (as an Alert, Site Area Emergency, General Emergency)?
- Did the classification aid in the rapid communication of critical information and the initiation of appropriate time-urgent emergency response actions?
- Was the initial classification upgraded using EALs?

Programmatic LOIs

General

- Does the site's command media structure reflect a flow down of classification requirements to the emergency plan (program description), and then to EPIPs that provide the "how-to" instructions?
- Does the command media establish the emergency categorization and classification system as a set of pre-approved decisions, agreed by senior management, state, and local officials; which allow authorized decision-makers to implement rapid decisions affecting personnel, facilities, and resources in response to an emergency?
- Has the site defined an emergency response boundary (ERB) that serves as the site boundary for emergency planning, emergency response and safety analysis, and if the public is allowed unescorted access to areas of the site, those areas are considered offsite unless they can be evacuated and access control established within about one hour of any emergency declaration?
- Does the site have an agreement between the site office and facilities occupied by private businesses within the ERB regarding emergency notification and protective action responsibilities to consider them onsite for purposes of safety analysis and event classification?
- Does the contractor provide procedures that address the full range of potential emergencies at the site including radiological, non-radiological, terrorism, sabotage, fire, explosion, security, and natural phenomena?
- Does the contractor use a prompt categorization/classification matrix to provide fundamental definitions of emergency classes that an individual responsible for classification can use to compare his/her subjective evaluation and make an emergency declaration?

Categorization

- Has the contractor established procedures to categorize operational emergencies?
- Is authority and responsibility for categorizing an event/condition, and if necessary, determining the emergency classification, clearly defined, recognized, and understood by ERO personnel?
- Are the OE categorization criteria reviewed and tested regularly against a range of initiating conditions and emergency event/condition scenarios to validate the indicated emergency categorization/classification?

Classification

- Has the contractor at DOE/NNSA OE Hazardous Material Program facility also established procedures to classify emergency events (as an Alert, Site Area Emergency, General Emergency)?
- Does the site classify events using a facility-specific EAL as the first choice; if a facility-specific EPHA or EAL set is incomplete, then utilize site-wide or discretionary EALs; and, in the absence of a facility specific EAL, discretionary EAL, or site-wide EAL categorize and classify in accordance with a prompt categorization/classification matrix?
- Has the contractor developed facility-specific EALs for each identified accident or emergency event scenario analyzed in the EPHA and provided the corresponding initiating conditions, accident

mechanisms, equipment or system failures, event indicators, and contributing events to enable observable, unambiguous, and objective EALs?

- Does the contractor provide site-wide EALs to compensate for multiple events or an event that would involve numerous facilities?
- Does the contractor provide discretionary EALs to provide criterion and judgment-based EAL statements to cover situations not addressed in facility-specific EALs, applicable to all three severity classes?
- Are EALs for classifying OEs clear, straightforward, usable and unambiguous to the decision-maker?
- Do the EALs for classifying OEs provide for early recognition, are they reliable, redundant, and internally consistent, and are they comprehensive and anticipatory of potential/future consequences?
- Are the EALs stated in terms of readily available indications or observable conditions?
- Are site-/facility-specific EALs developed and approved for the spectrum of OEs resulting in the actual or potential airborne release of (or loss of control over) hazardous material?
- Do site-/facility EALs provide for classifying events on the basis of measured or predicted hazardous material consequences at specific receptor locations (i.e., facility and site boundaries)?
- Is the appropriate set of appropriate site/facility-specific EALs readily accessible to the responsible decision-maker?
- If a suspected release of (or loss of control over) hazardous material fails to meet or exceed an EAL, then does a common sense, conservative assessment of the indications or observable conditions lead to an initial default estimate of the classification of the emergency event/condition using the discretionary EAL (i.e., a discretionary EAL is included in the EAL set to compensate for possible incompleteness and to ensure that a decision can be made rapidly based on the current understanding of the situation.)?
- Associated with a specific event EAL, does the decision-maker obtain default (i.e., pre-determined) conservative Protective Actions (PAs), for immediate implementation onsite, and Protective Action Recommendations (PARs), for immediate recommendation off site?
- Are site-wide, non-facility-specific EALs used to classify events such as: terrorist threats, major natural phenomena, external events that can affect site operations, etc.?
- Are the EALs reviewed and tested regularly against a range of initiating conditions and emergency event/condition scenarios to validate the indicated emergency categorization/classification?
- Are hazardous material emergencies involving DOE/NNSA facilities classified OEs as an Alert, Site Area Emergency, or General Emergency, in order of increasing severity, when events occur that represents a specific threat to workers and the public due to the release or potential release of significant quantities of hazardous materials?
- Does classification lead to the rapid communication of critical information and the initiation of appropriate time-urgent emergency response actions?
- Are predetermined conservative onsite protective actions and offsite protective action recommendations associated with the classification of these OEs (as an Alert, Site Area Emergency or General Emergency)?
- For emergencies involving hazardous materials, are time-urgent response actions identified to minimize or prevent unacceptable consequences?
- Is the classification of an OE involving the actual or potential airborne release of hazardous material as Alert, Site Area Emergency, or General Emergency based on the distance at which estimated consequences exceed the applicable health effect threshold (i.e., PAC for the specific hazardous material released)?
- Are events classified on the basis of potential severity of consequences?
- Is the current classification modified (i.e., upgraded) based on continuous monitoring for event degradation or a reassessment that indicates that the event is more severe than originally perceived?
- In declaration of an Alert is there availability of personnel and resources to:

    - Continuously assess pertinent information for DOE/NNSA decision makers, off-site authorities, the public and other appropriate entities?
    - Conduct appropriate assessments, investigations, or preliminary sampling and monitoring?
    - Mitigate the severity of the occurrence of its consequences?
    - Prepare for other response actions should the situation become more serious, requiring emergency response organizations to mobilize or activate resources?
- In declaration of a Site Area Emergency is there the same response as for an Alert plus:
    - Initiation of predetermined protective actions for onsite personnel?
    - Notification and assembly of emergency response personnel and equipment to activate response centers and to establish communications, consultation, and liaison with offsite authorities?
    - Provision of information to the public and media?
    - Implementation of or assistance in any evacuations and sheltering?
    - Mobilization of appropriate emergency response groups or protective/security forces for immediate dispatch, should the situation become more serious?
- In declaration of a General Emergency is there the same response as for a Site Area Emergency plus:
    - Notification, mobilization, and dispatch of all appropriate emergency response personnel and equipment, including appropriate DOE emergency response assets, and liaison with offsite authorities for the recommendation of predetermined public protective actions.
- Does the classification process require an OE to remain at the highest level classified until the emergency is terminated; however, protective actions/PARs may be changed commensurate with and proportional to the consequences of the event?

Good Practice

- Have the decision makers been provided with any tools (automated or otherwise) that enhance their ability to complete the categorization and classification?

REVIEW APPROACH

Record Review:
- Review the emergency plan.
- Review EPIPs.
- Review EPHAs and EALs.
- Review categorization/classification training lesson plans.

Interviews:
- Interview DOE/NNSA Field Element and contractor personnel responsible for managing categorization and classification activities during an emergency event.
- Interview offsite EROs that respond to classified events to determine if they have received current EALs and have received information to support understanding.
- Interview site personnel responsible for developing EALs

Observations:
- Observe tabletops with initial decision-makers and with the site manager/crisis manager to determine adequacy of tools and understanding of emergency event classification.
- Observe limited scope performance tests.
- Observe initial and continuing classification during an emergency exercise and impact on and interface with performance of other emergency response elements.
- Walk down facilities to review indicators referenced in EALs.

- Observe whether EALs are available and current for personnel performing event classification.
- Observe training and drills.

4.8 Protective Actions

OBJECTIVES

PA.1: DOE sites/facilities/activities must identify protective actions commensurate for the potential hazards of the site/facility/activity and maintain procedures for prompt issuance of protective actions to workers. (DOE Order 151.1D, Attachment 3, Paragraph 9)

CRITERIA

1. *Protective actions must be predetermined and serve to minimize emergency-related consequences and maximize life safety and health. DOE sites/facilities/activities must accomplish the following.*

   a. Develop pre-determined protective actions for hazards/threats identified in the all hazards planning basis.
   b. Develop a process to issue protective actions.
   c. Develop a procedure to account for employees.
   d. Consider whether additional protective actions are needed for severe incidents, such as self-help instructions when the site/facility/activity is isolated from outside response assistance and evacuation of the site/facility/activity when conditions are deteriorating.

(DOE Order 151.1D, Attachment 3, Paragraph 9a-d.)

PA.2: *In addition to the protective action requirements contained in Attachment 3, DOE sites/facilities/activities with an Emergency Management Hazardous Material Program must also accomplish the following.*

3. *Identify predetermined onsite protective actions and offsite protective action recommendations consistent with the hazard (internal vs. external exposure) and duration of the release (short vs. long) based upon the results of EPHAs.* (DOE Order 151.1D, Attachment 4, Paragraph 9.a)
4. *Identify and evaluate incidents in which combinations of protective actions for varying facilities/activities may apply.* (DOE Order 151.1D, Attachment 4, Paragraph 9.b)
5. *Identify authorities for the lifting or adjustment of protective actions, once protective actions have been taken.* (DOE Order 151.1D, Attachment 4, Paragraph 9.c)
6. *Establish methods for controlling, monitoring, and maintaining records of personnel exposures to hazardous materials.* (DOE Order 151.1D, Attachment 4, Paragraph 9.d)
7. *Establish methods for controlling access to contaminated areas and for decontaminating personnel or equipment exiting the area.* (DOE Order 151.1D, Attachment 4, Paragraph 9.e)
8. *Identify actions that may be taken to increase the effectiveness of protective actions, such as shutdown of heating, ventilation, and air conditioning during sheltering-in-place.* (DOE Order 151.1D, Attachment 4, Paragraph 9.f)
9. *An Incident Commander qualified at the 29 CFR 1910.120(q)(6)(v) level may use standard industry practices (e.g., Department of Transportation Emergency Response Guide (DOT/ERG), Materials Safety Data Sheets (MSDSs), etc.) in accordance with Occupational Health and Safety Administration (OSHA) 1910.120 for initial immediate protective actions. For EPHA facilities, verification that the initial immediate protective actions are consistent with the technical planning basis (i.e.,*

EPHA/EALs) for the facility is required within 15 minutes of protective action issuance and implementation. (DOE Order 151.1D, Attachment 4, Paragraph 9.g)

10. *DOE site/facility/activity must have an emergency notification system capable of providing immediate notification and protective actions to affected employees but no later than 10 minutes after the protective actions have been identified in accordance with the emergency management plan and related procedures. Communications equipment must be tested annually, or more frequently as necessary for the notification system (e.g., post-maintenance testing, communication equipment upgrades, etc.).* (DOE Order 151.1D, Attachment 3, Paragraph 10.b)

Performance

- Are protective actions promptly and effectively implemented or recommended for implementation, as needed, to minimize the consequences of emergencies and to protect the health and safety of workers and the public?
- Are protective actions implemented individually or in combination to reduce exposures to a wide range of hazardous materials?
- Are protective actions reassessed throughout an emergency and modified as conditions change?
- Are all emergency response activities, including search and rescue, incident mitigation activities, field monitoring, and reentry are planned and controlled with a focus on health and safety of emergency responders within preplanned protective action exposure guidelines?
- Are the notification and implementation of on-site PAs and notification of off-site PARs made in a timely, efficient, and unambiguous manner - confirmed and monitored by the ERO?
- Are modifications to initial protective actions developed and implemented based on updated and refined data generated from the continuous consequence assessment process?
- Are other possible protective actions for onsite and offsite populations, such as thyroid blocking agent, chemical neutralizing agents, water and food intervention levels, transportation route access controls, and impromptu respiratory protection considered by decision-makers?
- Is on-site protective action decision-making coordinated with site organizations such as security and safety?
- Are security and law enforcement measures implemented during a physical attack that impact worker and responder access and egress (e.g., lockdown) coordinated with emergency management and site security?
- Is the identification of necessary PPE coordinated with emergency management and safety professionals; including for example industrial safety, IH, HP, and fire protection engineering?
- Did the contractor demonstrate effective emergency notification capabilities to provide immediate notification and protective actions to affected employees no later than 10 minutes after the protective actions were identified?
- Did the contractor demonstrate an effective process to verify initial immediate protective actions are consistent with the technical planning basis (i.e., EPHA/EALs) for EPHA facilities within 15 minutes of protective action issuance and implementation?
- Are initial on-site protective actions and off-site protective action recommendations linked to facility-specific OE event classification criteria?
- Is reentry and approval of extended dose or exposure limits within the authority and responsibility of the Emergency Director?
- Are reentry activities performed safely and efficiently, with specific team composition (e.g., minimum of one medically trained member) and equipment that accomplishes the mission?
- Does reentry planning address the following:
  - Conduct of operations during reentry;
  - Range of hazardous materials which may be encountered;

- Hazard control procedures; type and nature of potential safety failures;
- Guidelines for prioritization of reentry activities;
- Team selection, personnel safety, job planning, communications during reentry; record keeping; and
- Provisions for backup to every reentry?

- Are provisions implemented to protect workers involved in response and cleanup? Do these include measures to ensure that security, fire, medical, and other response personnel are protected from exposure to hazards during the course of their movements while supporting response?
  - Are exposure criteria established and available for each type of entry and reentry activity, including search and rescue and repair?
  - Are 10 CFR 835, Subpart N, limits observed for radiological events, such as lifesaving, protection of health and property, and recovery of deceased? Volunteers are used for high-risk situations?
  - Do facility personnel estimate exposure to hazardous materials to protect workers and the public during reentry and recovery activities?
  - Does reentry planning include contingency planning to ensure the safety of reentry personnel, such as planning for the rescue of reentry teams?
  - Do all individuals involved in reentry receive a hazards/safety briefing consistent with Federal, state, and local laws and regulations?
  - Do responders involved in reentry receive pre-reentry hazards/safety briefings prior to emergency response activities and post-reentry briefings consistent with Federal, tribal, state, and local laws and regulations?
  - Was PPE selection, use limitations, care, maintenance, useful life and disposal in accordance with the referenced requirements? [29 CFR 1910.120 (q) (10) and 29 CFR 1910.120(g)]
  - Did employees engaged in emergency response and exposed to hazardous materials presenting inhalation hazards or potential inhalation hazard wear positive pressure self-contained breathing apparatus while engaged in emergency response, in accordance with the referenced requirement? [29 CFR 1910.120 (q)(3)(iv)]
  - Did backup personnel stand by with equipment ready to provide assistance or rescue?
  - Did advanced first aid support personnel, as a minimum, stand by with medical equipment and transport capability? [29 CFR 1910.120 (q)(3)(vi)]
  - Were respiratory protection fit tests, selection, use, maintenance and training conducted in accordance with the referenced OSHA requirements? [29 CFR 1910.132 (General Requirements for PPE Program) and 29 CFR 1910.134 (Respiratory protection requirements)]
- Are plans for the timely evacuation and/or sheltering of onsite personnel, along with provisions to account for employees after emergency evacuation has been completed, followed?
  - During emergency evacuations for site personnel, are evacuation route selection and logistical details implemented promptly and efficiently?
  - Do multiple evacuation egress routes provide options based upon release type and wind direction; and do evacuation routes avoid hazards, are routes familiar to site personnel, and coordinated with off-site authorities?
  - Is the reception/relocation center sufficient to accommodate the expected number of personnel; and are adequate personnel assigned to control evacuees and are they kept aware of change in on-site protective action modifications?
  - Do trained and assigned individuals assume and carry out responsibilities for building or facility accountability in the event of personnel evacuation?
  - Is initial accounting for all evacuated personnel completed in a timely manner to support initial search and rescue activities?
  - Is accountability continued to support ongoing search and rescue activities following an emergency evacuation?

- Are provisions implemented to protect workers involved in response and cleanup? Does this include measures to ensure that security, fire, medical, and other response personnel are protected from exposure to hazards during the course of their movements while supporting response?
    - Are applicable PACs used in protective action (e.g., sheltering, evacuation) decision-making for the actual or potential release of hazardous materials to the environment?
    - For radioactive materials, are PAGs promulgated by the EPA used?
    - Does the site use the following PACs for toxic chemicals (listed in order of preference): AEGLs promulgated by EPA; ERPGs published by the American Industrial Hygiene Association; and TEELs developed by DOE?
    - Does the site follow the following for hazardous biological materials: PACs are considered exceeded and immediate protective actions are required for any actual or potential release of agents or toxins outside of secondary containment barriers/ Long term PACs are specified by state or local public health officials?
    - Is habitability of on-site facilities, including emergency facilities, periodically determined using dosimetry and survey instruments, and relocation/evacuation measures are taken, if necessary?
    - Are actions that may be taken to increase the effectiveness of protective actions (i.e., heating, ventilation, and air conditioning (HVAC) shutdown during sheltering) implemented in a timely and efficient manner?
- Is access to and egress from actual or potentially contaminated areas, or the site, monitored and controlled?
    - Are people, vehicles, and equipment effectively monitored before leaving contaminated areas and the site, if possible; or, upon arrival at designated decontamination, relocation, or assembly areas?
    - Is sufficient staffing and equipment available to activate designated monitoring locations?
    - Do emergency facilities, equipment, personnel, and implemented methods and criteria provide effective decontamination of personnel and equipment for various levels and types of contamination (e.g., skin contamination)?
    - Are records of personnel exposures to hazardous materials (radiological, chemical and biological) effectively controlled, monitored, and maintained?
    - Are the names of individuals surveyed, the extent of any contamination found, the instruments used, and the methods employed, and results of any decontamination efforts recorded?
    - Does the contractor require contaminated individuals be scheduled for follow-up actions (e.g., subsequent TLDs, whole body counts, and/or bioassays)?
- Are candidate PARs coordinated with off-site authorities and well-defined geographic areas for sheltering and evacuation, special needs areas or special populations, and evacuation routes are readily available?
- Are ingestion pathways PARs formulated when appropriate and communicated to offsite authorities?
- Did the contractor issue predetermined PARs (for an event classified as a General Emergency)?
- Did the contractor provide the estimated plume arrival time at key offsite receptors of interest and identify specific offsite areas within which PAC may be exceeded?
- Did the contractor provide timely recommendations to appropriate state, tribal, or local authorities of protective actions, such as sheltering, evacuation, relocation, and food control?
- If the site utilizes emergency planning sectors to support communicating PAR information, were the correct sectors provided?
- If applicable, was the public warning (siren) system, coordinated with the Emergency Alerting System, used issue/implement protective action recommendations?
- Are ingestion pathway PARs formulated when appropriate and communicated to offsite authorities?

Programmatic LOIs

- Does the site's command media structure reflect a flow down of protective action requirements to the emergency plan (program description), and then to EPIPs that provide the "how-to" instructions?
- Does the contractor have a protective action EPIP that implements a comprehensive protective action process derived from EPHA determinations and described in the site emergency plan?
- Does the contractor divide onsite protective actions geographically into an initial isolation zone and a protective action zone?
    - Does the contractor define the initial isolation zone as the area surrounding the incident in which persons may be exposed to dangerous (upwind) or life-threatening (downwind) concentrations of material and is based on potential AEGL-3 or 100 rem consequences calculated and documented in the EPHA?
    - Does the contractor require evacuation of non-essential personnel from the initial isolation zone (typically a circular area), if conditions allow, and ensure responders entering the initial isolation zone are aware of the hazards, use appropriate personal protective equipment, and have monitoring capability for the hazard?
    - Does the contractor define the protective action zone as an area downwind from the incident in which persons may become incapacitated and unable to take protective action and/or incur serious or irreversible health effects and is based on potential AEGL-2 or 1 rem consequences from the EPHA?
    - Does the contractor have a verified sophisticated understanding of the local atmospheric transport/dispersion environment, including the integration of current meteorological conditions, geographic information systems, and EPHA consequence analyses to enable rapid determination of initial protective actions, if using a downwind protective action zone?
- Does the contractor delineate how emergency notification capabilities provide immediate notification and protective actions to affected employees no later than 10 minutes after the protective actions have been identified?
- Does the contractor have a process to verify initial immediate protective actions are consistent with the technical planning basis (i.e., EPHA/EALs) for EPHA facilities within 15 minutes of protective action issuance and implementation?
- Does the contractor reassess protective actions throughout an emergency and modify as conditions change?
- Does the contractor incorporate the as low as reasonably achievable concept into onsite protective actions to determine whether to shelter, relocate, or evacuate?
    - Are protective actions such as evacuation and sheltering clearly identified and capable of being implemented as specified?
    - Does the contractor normally recommended sheltering for actual or projected release duration of less than 15 minutes or plume arrival time less than 45 minutes?
    - Has a mechanism for performing personnel accountability been established and implemented?
    - Does the contractor use a goal of 30 minutes for full personnel accountability in areas where workers might be subject to risk of death or serious injury and where search and rescue operations might pose a significant risk to emergency personnel?
    - Do protective actions reflect a conservative assessment of the level of health effect and extent of potentially affected/impacted area and populations?
    - Does the contractor define how the general site population implements protective actions promptly and effectively, as needed, to minimize the consequences of emergencies and to protect the health and safety of workers?
    - Does the contractor implement protective actions individually or in combination to reduce exposures to a wide range of hazardous materials?

- Is habitability of on-site facilities, including emergency facilities, periodically determined using dosimetry and survey instruments, and relocation/evacuation measures are taken, if necessary?
- Are actions that may be taken to increase the effectiveness of PAs (i.e., heating, ventilation, and air conditioning (HVAC) shutdown during sheltering) implemented in a timely and efficient manner?

- Does the contractor issue predetermined PARs for all events classified as a General Emergency, using shelter-in-place as the default PAR due to the time required to implement evacuation before plume arrival?
  - In addition to providing distance to PAC determinations in the offsite PAR, does the contractor provide the estimated plume arrival time at key offsite receptors of interest and identify specific offsite areas within which PAC may be exceeded?
  - Does the contractor have methods for providing timely recommendations to appropriate state, tribal, or local authorities of protective actions, such as sheltering, evacuation, relocation, and food control?
  - Does the site utilize emergency planning sectors to support communicating PAR information?
  - Are emergency planning sector boundaries established that allow the use of common sector descriptions based on highways, rivers, and other geographical landmarks, which enables effective communication of protective actions and correlation with off-site monitoring points?
  - Does the site utilize a public warning siren system, coordinated with the Emergency Alerting System, to facilitate issuance to protective action recommendations?
  - Does the site have a protocol among jurisdictional offsite agencies to utilize the public warning system and the Emergency Alerting System to notify the public?
  - Are candidate PARs coordinated with offsite authorities and well-defined geographic areas for sheltering and evacuation, special needs areas or special populations, and evacuation routes are readily available?
  - Are ingestion pathway PARs formulated when appropriate and communicated to offsite authorities?
- Did the contractor, at the DOE/NNSA site/facility provide protective action planning for the general site population?
  - Does the contractor have procedures that define facility-specific implementation for evacuation and sheltering of employees?
  - Does the contractor have facility-specific procedures that account for employees after emergency evacuation?
  - Do multiple evacuation/egress routes provide options based upon release type and wind direction?
  - Do trained and assigned individuals assume and carry out responsibilities for building or facility accountability in the event of personnel evacuation?
  - Is initial accounting for all evacuated personnel completed in a timely manner to support initial search and rescue activities?
  - Is accountability continued to support ongoing search and rescue activities following an emergency evacuation?
  - Do evacuation routes avoid hazards, are routes familiar to site personnel, and coordinated with off-site authorities?
  - Is the reception/relocation center sufficient to accommodate the expected number of personnel; and are adequate personnel assigned to control evacuees and are they kept aware of change in on-site protective action modifications?
  - Does the contractor ensure the protection of workers, covered by 29 CFR 1910.120, involved in response and clean-up?
- Did the contractor (at DOE/NNSA OE Hazardous Material Program facilities) predetermine protective actions for onsite personnel and the public, and did this include:

    - Methods for controlling, monitoring, and maintaining records of personnel exposures to hazardous materials;
    - Procedures to implement the separate protective actions of evacuation and sheltering;
    - Methods for controlling access to contaminated areas and for decontaminating personnel or equipment exiting the area;
    - Actions that may be taken to increase the effectiveness of protective actions [i.e., heating, ventilation, and air conditioning (HVAC) shutdown during sheltering]?
- Are initial onsite protective actions and offsite PARs linked to facility-specific OE event classification criteria (i.e., EALs)?
- Are initial onsite protective actions and offsite PARs linked to facility-specific biological OE event recognition and categorization criteria?
- Are applicable PACs used in protective action (e.g., sheltering, evacuation) decision-making for the actual or potential release of hazardous materials to the environment?
- For radioactive materials, are PAGs promulgated by the EPA used?
- Does the site use the following PACs for toxic chemicals (listed in order of preference): AEGLs promulgated by EPA; ERPGs published by the American Industrial Hygiene Association; and TEELs developed by DOE?
- Does the site follow the following for hazardous biological materials: PACs are considered exceeded and immediate protective actions are required for any actual or potential release of agents or toxins outside of secondary containment barriers/ Long term PACs are specified by state or local public health officials?
- Is access to and egress from actual or potentially contaminated areas, or the site, monitored and controlled?
    - Does the contractor effectively monitor people, vehicles, and equipment before leaving contaminated areas and the site, if possible; or, upon arrival at designated decontamination, relocation, or assembly areas?
    - Is sufficient staffing and equipment available to activate designated monitoring locations?
    - Do emergency facilities, equipment, personnel, and implemented methods and criteria provide effective decontamination of personnel and equipment for various levels and types of contamination (e.g., skin contamination)?
    - Are records of personnel exposures to hazardous materials (radiological, chemical and biological) effectively controlled, monitored, and maintained?
    - Are the names of individuals surveyed, the extent of any contamination found, the instruments used and the methods employed, and results of any decontamination efforts recorded?
    - Does the contractor identify contaminated individuals for follow-up actions (e.g., subsequent whole body counts and/or bioassays)?
    - Does the contractor require all emergency response activities, including search and rescue, incident mitigation activities, field monitoring, and reentry planned and controlled with a focus on health and safety of emergency responders within preplanned protective action exposure guidelines?
- Do procedures adequately assign responsibility for ongoing notification and implementation of onsite protective actions and notification of offsite PARs in a timely, efficient, and unambiguous manner that is confirmed and monitored by the ERO?
    - Do procedures assign responsibility for analysis and modifications to initial protective actions based on updated and refined data generated from the continuous consequence assessment process?
    - Are other possible protective actions for onsite and offsite populations, such as thyroid blocking agent, chemical neutralizing agents, water and food intervention levels, transportation route access controls, and impromptu respiratory protection considered by decision-makers?

    - Is onsite protective action decision-making coordinated with site organizations such as security and safety?
    - Does the contractor adequately plan for security and law enforcement measures that affect worker and responder access and egress (e.g., lockdown) and coordinate with emergency management and the site protective force?
- Does the contractor identify necessary PPE for an emergency response and coordinate with emergency management and safety professionals, including industrial safety, industrial hygiene, health physics, and fire protection engineering?
    - Were PPE selection, use limitations, care, maintenance, useful life, and disposal in accordance with the referenced requirements? [29 CFR 1910.120 (q) (10) and 29 CFR 1910.120(g)]
- Are provisions implemented to protect workers involved in response and cleanup? Does this include measures to ensure that security, fire, medical, and other response personnel are protected from exposure to hazards during the course of their movements while supporting response?
    - Is reentry and approval of extended dose or exposure limits within the authority and responsibility of the Emergency Director?
    - Are exposure criteria established and available for each type of reentry activity, including search and rescue, and repair?
    - Does the contractor ensure 10 CFR 835, Subpart N, limits are observed for radiological events, such as lifesaving, protection of health and property, and recovery of deceased? Volunteers are used for high-risk situations?
    - Do facility personnel estimate exposure to hazardous materials to protect workers and the public during reentry and recovery activities?
    - Does reentry planning include contingency planning to ensure the safety of reentry personnel, such as planning for the rescue of reentry teams?
    - Do all individuals involved in reentry receive a hazards/safety briefing consistent with Federal, state, and local laws and regulations?
    - Do responders involved in reentry receive pre-reentry hazards/safety briefings prior to emergency response activities and post-reentry briefings consistent with Federal, tribal, state, and local laws and regulations?

Good Practice

None.

REVIEW APPROACH

Record Review:
- Review the emergency plan.
- Review EPIPs.
- Review EPHAs and EALs.
- Review protective action training lesson plans.
- Review general employee protective action training courses.

Interviews:
- Interview DOE/NNSA Field Element and contractor personnel responsible for managing protective actions during an emergency event.
- Interview offsite EROs that respond to classified events to determine if they have received current EALs and have received information to support understanding of protective action recommendations.
- Interview site personnel responsible for developing protective actions.
- Interview facility personnel responsible for implementing onsite protective actions.

Observations:

- Observe tabletops with initial decision-makers and with the site manager/crisis manager to determine adequacy of tools and understanding of protective action decision-making.
- Observe limited scope performance tests.
- Observe emergency protective action decision making during an emergency exercise (use of procedures, knowledge, timely).
- Observe adequacy of protective equipment in the field and within emergency response facilities during response.
- Observe use of protective equipment by emergency personnel.
- Observe emergency communications and interfaces with offsite emergency management organizations concerning protective action decision-making and communications.
- Observe emergency communication and interfaces between protective action decision makers and internal groups such as security, HP, IH.
- Observe the protection of workers during emergency response.
- Observe the planning, coordination and implementation of reentry activities.

4.9 Consequence Assessment

OBJECTIVES

CA.1: DOE sites/facilities/activities with an Emergency Management Hazardous Material Program must compute and correctly assess in a timely manner throughout the emergency the estimates of onsite and offsite consequences of actual or potential releases of hazardous materials that consider site specific characteristics (i.e., topography, meteorology).

CRITERIA

1. *Establish provisions to conduct consequence assessment that is – (1) integrated with emergency classification and protective action decision-making; (2) incorporated with facility and field indications and measurements, as required per the Emergency Management Plan; and (3) coordinated with offsite agencies.* (DOE Order 151.1D, Attachment 4, Paragraph 10.a)
2. *Establish provisions to conduct a timely initial assessment with the worst-case source term from the EAL using current meteorological conditions or if information is available, the actual source term based on known incident conditions from observations and indicators using current meteorological conditions for onsite and offsite consequences.* (DOE Order 151.1D, Attachment 4, Paragraph 10.b)
3. *Maintain consequence assessment and atmospheric dispersion modeling resources with the capability to –*

   (1) conduct timely initial assessment by producing a plume projection product for the worst-case and actual source term described in paragraph 10b above;
   (2) indicate the distance to which PAC is exceeded to aid in protective action decision-making for workers and first responders and to establish the basis for initial field monitoring activities;
   (3) conduct continuous ongoing assessment for the duration of the emergency as additional information (e.g., field data, source term, etc.) becomes available;

(DOE Order 151.1D, Attachment 4, Paragraph 10.e.(1)-(3))

4. *Maintain the capability to use the National Atmospheric Release Advisory Center as part of near real-time consequence assessment activities for the mode (primary, backup, corroborating) selected by the site/facility/activity.* (DOE Order 151.1D, Attachment 4, Paragraph 10.c)

5. *Ensure that facility/site meteorological data and information on source terms for actual or potential release of hazardous materials to the atmosphere are available or can be made available to NARAC in a timely manner to facilitate near real-time computations.* (DOE Order 151.1D, Attachment 4, Paragraph 10.d)
6. *Maintain consequence assessment and atmospheric dispersion modeling resources with the capability to –*

   (4) maintain field monitoring capabilities to perform field monitoring activities to confirm the plume boundaries as required per the Emergency Management Plan.

(DOE Order 151.1D, Attachment 4, Paragraph 10.e.(4))

Performance

- Did the Consequence Assessment Team (CAT) effectively support event recognition, categorization/classification, and initial protective actions using conservative preplanned responses by:
  - Arriving to in a timely manner to its primary workstation? If unable to relocate to the CAT's primary workspace, could the CAT still perform its functions?
  - Attending a briefing from personnel knowledgeable of the incident to understand what happened, identify the EAL in use, and know what protective actions were initiated?
  - Confirming the initial conservative categorization/classification and protective actions based on a review of EALs and known indicators and report its conclusions to appropriate decision-makers?
  - Identifying a conservative and bounding analysis from the set of analyzed scenarios when an incident conditions vary from the scenarios analyzed in the EPHA?
  - Consulting with personnel knowledgeable of facility instrumentation readings or witnesses to incident conditions to corroborate appropriate EALs are in use?
  - Using available instrumentation to confirm whether a release is in progress?
- Did the CAT effectively perform a timely initial assessment by:
  - Using the appropriate dispersion modeling program and the worst-case source term, or a confirmed source term, and real-time weather conditions as input data?
  - Properly considering the biological source-terms?
  - Using the appropriate dispersion modeling program for the incident that best analyzes airborne releases from heavy gasses, volatile liquids, and/or radioactive materials as applicable to the incident?
  - Using accurate input data for dispersion modeling, including release location, source term, PAC, release height, conservative or actual release durations, and actual weather conditions at the time of release?
  - Also analyzing the toxicological concern of radioactive materials?
  - Using the appropriate features if it's modeling programs to reflect the incidents dispersion mechanisms such as by explosion or fire?
  - Providing safe routing information for relocation of ERO members and evacuees?
  - Consulting with other subject matter experts for a more in-depth and accurate understanding of the incident and its consequences, such as industrial hygienists, health physicists, security, and facility operating personnel?
  - Reviewing the EPHA to confirm that assumptions made in the analysis and used as the EAL basis are consistent or conservative with the incident conditions?
  - Identifying onsite and offsite receptors of interest in the EPHA, mapping programs, or other tools and inform decision-makers of the populations of concern and the time of estimated plume arrivals?
  - Ensuring the safety of response personnel and evacuees at places such as command posts, staging areas, traffic control points, and assembly areas?

- Alerting decision-makers of impacts to remote areas?
- Seeking quality checks of their analysis before distribution is made of CAT products outside of the CAT?
- Seeking or providing security classification reviews of CAT products before distribution is made?
- Posting plume plots in informational systems, such as WebEOC or SharePoint files, per site procedures?
- Performing notifications and briefings using appropriate forms and complete and accurate records per site procedures?
- Informing appropriate decision-makers when consequence assessment results were available and either confirmed appropriate actions thus far or recommended changes be taken?
- Refraining from reducing protective actions based purely on dispersion modeling results and, instead, wait for actual field data?
- Highlighting in briefings where uncertainties exist in analytical assumptions?
- Highlighting in briefings any areas that are above PAC, TEL, or derived intervention limit concentrations?
- Providing appropriate protective action recommendations to decision-makers based on whether a continuous release or a puff release occurred and shelter infiltration rates?
- Providing estimated plume arrival times at receptors of interest to support formulation of protective actions?
- Using units of measure to clearly communicate areas of concern?
- Providing information about projections that would conclude that a hazard to site personnel no longer exists, such as when a volatile puddle would no longer contribute to an airborne threat because the minimal quantity would have evaporated or when a puff release of HAZMAT is projected to be well offsite?

- Did the CAT effectively perform continuous ongoing assessments by:
  - Performing additional dispersion projections as refined source-terms became known, changes to weather conditions occur, or when mitigating systems and actions were confirmed to be effective?
  - Monitoring for changing conditions, such as a spreading fire or earthquake aftershocks, and consider the full potential of increasing consequences?
  - Considering chemical-water reactions when it is raining or chemical spillage occurs in ponds or streams?
  - Considering the consequences when from multiple HAZMAT releases occur?
  - Considering resuspension of contaminants deposited in the area?
  - Periodically providing accurate and informative briefings to the EOC cadre, such as presentation of plume plot products, including airborne and deposition contours and differences in NARAC products and other dispersion modeling products periodically?
  - Providing recommendations to the EOC cadre regarding personnel or environmental protection, including ingestion pathways from water or food pathways?
  - Maintaining adequate communications with, facility EROs, on-scene command, EOC cadre, and other command centers per site procedures?
  - Providing updated consequence assessment results to on-site and offsite authorities after ensuring sensitive or classified information is not inappropriately released?
  - Distributing information to the appropriate Federal, tribal, state and local organizations per site procedures?
  - Involving themselves with the reduction of protective action decision making?
  - Performing NARAC dispersion modeling or requesting NARAC help in projecting refined or corroborative near real-time consequence assessment results?
  - Providing field monitoring teams plume projections for establishing contaminated boundaries for its planning activities?

- Integrating with the field monitoring team data collection activities to maintain situational awareness and to corroborate source terms used in projections?
- Assessing "what if" scenarios for plausible occurrence during mitigation of incident consequences?
- Were CAT members proficient at using their tools such as, EALs, EPHAs, MSDSs, the ERG, chemical inventory systems, accesses to meteorological data, and dispersion modeling programs?
- Did the CAT effectively communicate with interfacing response teams in acquiring and providing needed information in performing response functions such as using official lines of communications and accurately completed forms?
- Did the CAT provide appropriate input to incident termination decision-making?

- Did the field monitoring teams safely perform measurements of actual airborne, waterborne, and surface contamination by:
  - Developing monitoring plans using projections from the CAT?
  - Attending briefing covering conservative estimates of projected consequences and field monitoring plans prior to being dispatched for sampling, monitoring, and plume tracking activities?
  - Approaching survey areas safely from upwind?
  - Donning the appropriate PPE?
  - Using the appropriate portable detection equipment for the expected radiation or chemicals involved?
  - Providing measurements to the CAT to verify, update, and refine the source term and projected consequences through?
  - Successfully implementing field monitoring plans and plume tracking within and beyond the EPZ, and, similarly, verify the absence of consequences in specific areas?
  - Using available data from environmental monitoring programs used including data from installed air monitors, area radiation monitors, and in-plant surveys?
  - Coordinating with Federal, tribal, state, and local organizations in completing surveys and sharing results.
  - Performing habitability surveys at areas where responders are located and where workers may be at risk?

Programmatic LOIs

- Is the CAT sufficiently staffed with personnel trained in performing CAT functions?
- Is the CAT provided with an appropriately sized workspace for performing is functions?
- Is the CAT provided with the necessary equipment to perform its functions?
  - Communications with the field and ERO decision-makers are available.
  - Are means of providing consequence assessment plume plots to the field, ERO, and offsite authorities available? Such as:
    - Modeling programs from the DOE toolbox for initial and corroborative assessments.
    - Modeling programs provide to properly assess releases from chemicals, including heavy gases, and radiological as applicable for onsite HAZMAT.
    - Modeling programs that meet quality assurance requirements.
    - Site and/or NARAC capability for refinement of assessments using the NARAC dispersion model.
    - Providing NARAC with direct access to site meteorological data.
    - Establishing a means to provide offsite authorities information consistent with the security classification levels.
    - Having current and forecasted meteorological information available.

- Are plans, procedures, checklists, EPHAs, EALs, ERGs, MSDS, HAZMAT inventories, aides and support tools in place and quickly available that describes and supports the execution of CAT functions?
- Do procedures and checklists direct:
  - The confirmation of consequence assessments with incident classification based on distance to PAC calculations?
  - The sharing of consequence assessment results to decision-makers, including briefings to the EOC cadre?
  - The corroborative modeling tasks?
  - The implementation of NARAC modeling?
  - Planning for field monitoring teams and integrated with field monitoring data collection activities?
  - The evaluation of derived intervention levels?
  - Are consequence assessment procedures consistent with the concepts of operation described in the emergency plan?
- Are default "worst-case" HAZMAT quantities pre-loaded into dispersion modeling programs?
- Are correct and most appropriate PAC loaded into dispersion modeling programs?
- Are plans and procedures in place to assess HAZMAT releases from offsite sources such as nearby rail, water treatment facilities, and manufacturing plants?
- Are receptors of interest identified for onsite and offsite facilities within the EPZ?
- As available, is data from environmental monitoring programs used to support consequence assessment, including data from installed air monitors, area radiation monitors, and in-plant surveys?
- Is a formal Quality Assurance Program implemented and maintained for control of the tools used in consequence assessment, such as the meteorological monitoring system hardware and software, and dose modeling hardware and software?
- Does the facility's consequence assessment process for releases of biological agents, either detected or undetected, involve the confirmation that a release to the environment from a biosafety facility has occurred?
- Are natural phenomena (e.g., tornados, floods, severe wind, ice, or snow), which may result in or exacerbate an emergency condition at the facility, operation, and/or activity covered in plans and procedures?
- Are the tools used in consequence assessment, such as system hardware and software for meteorological monitoring and dose modeling, etc., available, reliable, calibrated and consistent with DOE and industry standards?
- Is the methodology for determining the type of hazard and source term compatible with instrumentation/monitor values (e.g., engineering units, range, conversion factors)?
- Are the instruments used for detection of chemical releases to the atmosphere sufficient range to accurately determine the concentration of the released chemical(s) in air versus the Emergency Response Planning Guidelines (ERPGs)?
- Are on-site and off-site receptors of interest identified quickly and readily available to emergency managers (e.g., receptor locations at the facility and site boundaries, to or beyond the EPZ boundary, and populations with special needs.)?
- Has the site selected NARAC as a primary, backup, or corroborating means for near real-time consequence assessment activities?
- Does the site have a means to provide site meteorological data and information on source terms to NARAC in a timely-manner to facilitate real-time computations?
- Does the site have the means to provide field monitoring teams projected plume boundaries?
- If the facility has the potential for an OE classified as a General Emergency, does the facility/site have connectivity to NARAC capabilities and procedures to use the NARAC capability effectively as

part of near real-time consequence assessment activities for the mode (primary, backup, corroborating) selected by the facility
- If the facility has the potential for an OE classified as a Site Area Emergency, does the facility/site have procedures in place to activate or request NARAC capabilities and is it able to use those capabilities as part of near real-time consequence assessment activities?
- All DOE/NNSA facilities/sites that have access to NARAC or have procedures in place to activate or request NARAC capabilities must ensure that facility/site meteorological data and information on source terms for actual or potential releases of hazardous materials to the atmosphere are available or can be made available to NARAC in a timely manner to facilitate near real-time computations. Does the facility/site meet this requirement?
- Are provisions in place for requesting support from the DOE radiological emergency response assets [e.g., AMS or the NARAC] to assist in accident and consequence assessments as well as to estimate the integrated impact of a hazardous materials release to on-site and off-site populations?
- Do the incident termination processes include input from the CAT?

Good Practice

None.

REVIEW APPROACH

Record Review:
- Review the emergency plan.
- Review EPIPs.
- Review EPHAs and EALs.

Interviews:
- Interview DOE/NNSA Field Element and contractor personnel responsible for managing consequence assessment activities during an emergency event, drill, and exercise.
- Conduct tabletop interviews of personnel responsible for performing consequence assessment.

Observations:
- Exercises
- Limited scope performance tests
- Training and drills

4.10 Emergency Facilities and Equipment/Systems

OBJECTIVES

FAC.1: DOE sites/facilities/activities are responsible for the provision of adequate emergency facilities and equipment/systems commensurate with the associated hazards/threats identified in the all hazards planning basis. Equipment must be maintained and tested, as applicable, to ensure equipment functions as designed for emergency response and implementation of protective actions based upon the all hazards planning basis.

FAC.2: DOE sites/facilities/activities with an Emergency Management Hazardous Materials Program must also establish and maintain an EOC, alternate EOC, and JIC; as well as supporting equipment.

CRITERIA

1. *Personal Protective Equipment (PPE)*

   (1) DOE sites/facilities/activities must provide appropriate PPE to emergency responders commensurate to the hazards present in the working environment.
   (2) DOE sites/facilities/activities must identify in the emergency management plan, or other documentation, caches of specialty equipment, (e.g., PPE, stretchers, evacuation chairs, and self-rescuers for underground facilities) that may be required if an emergency occurs.

(DOE Order 151.1D, Attachment 3, Paragraph 10.a)

2. *Communications Equipment - DOE site/facility/activity must have an emergency notification system capable of providing immediate notification and protective actions to affected employees but no later than 10 minutes after the protective actions have been identified in accordance with the emergency management plan and related procedures. Communications equipment must be tested annually, or more frequently as necessary for the notification system (e.g., post-maintenance testing, communication equipment upgrades, etc.).* (DOE Order 151.1D, Attachment 3, Paragraph 10.b)
3. *Emergency Operations System - DOE sites/facilities/activities must maintain systems and/or facilities to support emergency response operations. These must include communications capabilities and systems adequate to support ERO activities and communications with Headquarters Watch Office.* (DOE Order 151.1D, Attachment 3, Paragraph 10.c)
4. *Communications Equipment*

   (1) Maintain EOC primary and backup communications capabilities adequate to support incidents identified in the EPHAs.
   (2) Maintain equipment capable of transmitting information in a secured fashion if classified or controlled unclassified information is generated, handled, or stored by the site/facility/activity.

(DOE Order 151.1D, Attachment 4, Paragraph 11.e)

5. *Meteorological Monitoring Equipment*

   (1) Maintain a meteorological capability to provide real-time onsite/local meteorological data and maintain access to meteorological expertise for site consequence assessments.
   (2) The onsite data collection, processing, and availability must meet current guidance and standards and must be appropriate for the level of incident possible per current guidance and standards (DOE O 458.1, Administrative Change 3, Radiation Protection of the Public and the Environment and DOE-HDBK-1216-2015, Environmental Radiological Effluent Monitoring and Environmental Surveillance).
   (3) Maintain or access a meteorological modeling capability or access to reliable real-time offsite meteorological data to conduct proper offsite consequence assessment activities if the site/facility/activity has EPHA results that indicate the potential for a General Emergency.

(DOE Order 151.1D, Attachment 4, Paragraph 11.f)

6. *Emergency Operations Center*

   Designate and maintain a facility for use as an Emergency Operations Center. The EOC must:

   (1) be accessible on a twenty-four hour basis to authorized onsite and offsite ERO members;
   (2) be equipped with systems and equipment to support EOC activities, e.g., information management, mapping, and secure and non-secure communications;

(3) be equipped with an information management system that provides a single access point for collection and dissemination of emergency event information and provides status reports to the Headquarters Emergency Operations Center;
(4) certify High Efficiency Particulate Air (HEPA) filters at an approved test facility, if occupants rely on HEPA filters for protection from airborne contaminates; and
(5) ensure that the system removes the types of plausible contaminates, if occupants rely on a filtration system for habitability.

(DOE Order 151.1D, Attachment 4, Paragraph 11.a)

7. *Alternate Emergency Operations Center (AEOC)*

   Maintain an AEOC capability (e.g., physical, virtual, or mobile) that can perform the key functions of the primary EOC if the primary EOC is not available. Any physical AEOC must be located so both it and the primary EOC are not impacted by the same incident as determined by the results of the EPHAs. AEOC must be located outside the EPZ or located so both it and the primary are not impacted by the same incident (i.e., upwind from the prevailing wind direction). (DOE Order 151.1D, Attachment 4, Paragraph 11.b)

8. *New Emergency Operations Center*

   Incorporate the following criteria into the design, construction, and maintenance of new EOCs at DOE sites with DNFs.

   (1) If the EOC is located within the EPZ, it must be able to remain habitable during radiological and hazardous materials releases.
   (2) In order to withstand natural phenomena incidents, the EOC must be designated as an Essential Facility in accordance with the International Building Code or state/regional/local equivalent building code (if approved by the Field Element Manager or appropriate Federal Manager per DOE Order 420.1C, Administrative Change 1, Facility Safety) and meet the design requirements of the applicable building code.
   (3) The EOC must be capable of sustaining emergency operations for a minimum of 72 hours during severe events when site or commercial infrastructure may be disrupted.
   (4) Any new EOC design and construction project that has received Critical Decision 2 (CD-2) (Performance Baseline) approval per DOE O 413.3B Administrative Change 1, Program and Project Management for the Acquisition of Capital Assets, as of the date of issuance of this Order, is exempt from the requirements of paragraph 11.c.

(DOE Order 151.1D, Attachment 4, Paragraph 11.c)

9. *DNFs must identify onsite emergency response facilities (i.e., primary EOCs, control rooms, operation centers, medical facilities, fire departments). For these facilities, the DOE facility/site must–*

   (1) develop compensatory measures for onsite emergency response facilities that are not survivable and habitable, and
   (2) maintain and test safety functions and features to ensure they function as designed.

(DOE Order 151.1D, Attachment 4, Paragraph 11.g)

10. *Joint Information Center*

(1) Have provisions in place to establish a JIC to serve as a working location, where multiple jurisdictions gather, process and disseminate public information during an emergency.
(2) Maintain equipment and systems to support JIC activities to include public inquiry, media inquiry, media monitoring, media support services, and management and administrative activities.
(3) Identify a location for the JIC outside the EPZ.

(DOE Order 151.1D, Attachment 4, Paragraph 11.d)

11. *Defense Nuclear Facilities must* –

(1) develop safe shutdown or walkaway strategies for equipment and facilities during emergencies, and
(2) ensure a transition of responsibilities and required actions between normal work activities, incident activities, and recovery operations.

(DOE Order 151.1D, Attachment 4, Paragraph 11.h)

Performance-based LOIs

PPE

- Were personnel protective equipment (PPE) appropriate and adequate for the hazards encountered?
- Did personnel demonstrate proficiency in donning and using PPE?
- Was the PPE in good working condition?
- Was PPE quickly and easily located?

Communications

- Did the communication/warning system convey notification and protective actions to the affected workers within 10 minutes of identification?
- Are building and area alarms or public address (PA) systems audible (or visible) in the areas necessary to alert facility personnel to emergency conditions?

Facilities

- Did the equipment needed during the emergency response (or exercise) function as expected and intended (or was repaired or obtained in a timely manner)? This includes:
  - Current reference materials and decisional aids,
  - Area and process monitors,
  - Public address system,
  - Personnel protective equipment,
  - Portable monitoring instruments and personnel monitoring devices,
  - Siren and alarm systems,
  - Decontamination equipment, and
  - Communication equipment.
- Did habitability equipment function as necessary to maintain an acceptable atmosphere?
- As necessary, was conversion of facilities to emergency response facilities accomplished in a timely and efficient manner?

- Did the Defense Nuclear Facility effectively implement safe shutdown or walkaway procedures for equipment and facilities?
- Did the Defense Nuclear Facility effectively execute procedures to transition responsibilities and required actions from normal work activities to incident activities and, finally, recovery operations?

EOC

- Did EOC equipment function adequately to support the response?
- Did EOC habitability equipment function as necessary to maintain an acceptable atmosphere?
- As necessary, is conversion of facilities to emergency response facilities accomplished in a timely and efficient manner?
- Did the equipment needed during the emergency response (or exercise) function as expected and intended (or was repaired or obtained in a timely manner)? This includes:
    - Current reference materials and decisional aids,
    - Area and process monitors,
    - Public address system,
    - Personnel protective equipment,
    - Portable monitoring instruments and personnel monitoring devices,
    - Siren and alarm systems,
    - Decontamination equipment, and
    - Communication equipment.

AEOC

- Was the AEOC ready and equipped to implement the backup functions?
- Was the AEOC set up and operating in a timely manner?
- Was a sufficient level of equipment (especially communications and information management) available to support the response, including maintaining situational awareness?
- Did AEOC equipment function adequately to support the response?
- Did AEOC habitability equipment function as necessary to maintain an acceptable atmosphere?

JIC

- Did JIC equipment function as required to:
    - Facilitate the preparation and coordination of emergency information release to the public through the news media?
    - Monitor and respond to information on social media platforms?
    - Support onsite and offsite communications?

Meteorological Equipment

- Did site meteorological equipment provide accurate, real-time onsite/local meteorological data?
- If the site does not maintain a meteorological modeling capability, was reliable, real-time offsite meteorological data, such as NARAC, used to support response?

Programmatic LOIs

PPE

- Are adequate personnel protective equipment (PPE), and other emergency equipment and supplies, readily available and operable to meet the needs determined by the results of the EPHA?
- Does the emergency plan or other appropriate document identify the location of caches of specialty equipment, (e.g., PPE, stretchers, evacuation chairs, and self-rescuers for underground facilities)?
- Do procedures require the inventory and maintenance of PPE and caches of specialty equipment periodically and following drills and/or exercises? (EMG 151.1D.1-4 para 4.6)

Communications

- Can the communication/warning system convey notification and protective actions to the affected workers within 10 minutes of identification?
- Do records indicate reliability of equipment for communications with emergency organizations and response personnel?
- Are building and area alarms or public address (PA) systems designed, installed and maintained to alert facility personnel to emergency conditions?
- Have building and area alarm and/or public address systems been tested to identify "dead" spots? If so, have adequate compensatory measures been implemented for those areas requiring additional measures?
- Are employee alarm systems in place and operable per the referenced OSHA requirement? (29 CFR 1910.165, Employee Alarm Systems)
    - Does the system provide timely warning to allow reaction time for safe escape?
    - Is the alarm capable of being perceived above ambient noise or light levels by all employees in the affected area?
    - Is the alarm distinctive and recognizable as a signal to evacuate?
    - If installed per 29 CFR 1910.165, is the (non-supervised) notification system tested at least every two months?
    - If the system is a multi-actuation device system, is it tested from a different actuation device such that the same device is not tested for two consecutive times?
    - Are manual actuation devices unobstructed, conspicuous, and readily accessible?
- Is the notification system tested at least annually and at other times as appropriate such as following maintenance?
- If required, is a secure communication installed, maintained, and tested?

EOC

- Are the characteristics of the dedicated command center, and other auxiliary facilities, adequate to reliably support response to the hazards identified in the EPHA?
- Are designated response facilities, especially multi-use facilities, adequately maintained to ensure timely activation and availability to support an emergency response?
- Is command center access control adequate and does it result in efficient and timely identification of assigned staff?
- Is the command center accessible to both onsite and offsite authorized personnel on a 24-hour basis?
- Are facilities and equipment to support emergency response available, operable, and maintained?
- Does the EOC have appropriate personnel protective equipment, detectors, and decontamination equipment?

- If necessary, does the site have a procedure to convert facilities for use in an emergency? Note: Emergency Management Hazardous Material sites should have a dedicated EOC. (EMG 151.1D 1-4)
- Are facility systems and installed equipment adequate to support facility functions and level of staffing?
- Do the actual function(s) and operating characteristics of specific equipment adequately support the intended function(s) during emergency response?
- Are periodic inspections, operational checks, calibration, preventive maintenance and testing of equipment and supplies carried out as required in accordance with manufacturer's instructions or industry standards?
- Are inventories of all emergency equipment and supplies maintained with the equipment location identified?
- Are communication systems with DOE HQ, Operations/Field offices and off-site organizations periodically tested?
- Is Command Center access control adequate and does it result in the efficient and timely identification of assigned staff?
- Does the site/facility provide facilities and equipment adequate to support emergency response, including the capability to notify employees of an emergency to facilitate the safe evacuation of employees from the work place, immediate work area, or both?
- Is the capability to notify employees of an emergency to facilitate the safe evacuation of employees from the work place, immediate work area, or both available?
- Do emergency response facilities use backup or alternate power supplies in the event of loss of power?
- Are provisions established to ensure operational compatibility between facility response capabilities and DOE or NNSA assets?
- Does the EOC have the capability of maintaining an electronic log of key events accessible by all ERO staff? (EMG 151.1D 1-4)

<u>AEOC</u>

- Does the site have an alternate EOC?
- Are there procedures in place which govern the decision and activation of the AEOC?
- If necessary, does the site have a procedure to convert the facility for use as an AEOC in an emergency? Note: Emergency Management Hazardous Material sites should have a dedicated EOC. (EMG 151.1D 1-4)
- Is the location of the AEOC outside the current or proposed EPZ?
- If not, has the location of the AEOC within the EPZ been analyzed and a determination made that the same event cannot affect both the EOC and the AEOC?
- Can the AEOC perform all of the key functions of the primary EOC?
- Is there monitoring equipment installed or available at the AEOC to confirm the habitability of the AEOC? (EMG 151.1D 1-4)
- Does the communication and information processing system meet the same capability and interoperability specifications of the primary? (EMG 151.1D 1-4)
- Are backup communications systems such as cellular phones and/or satellite phones and radios available? (EMG 151.1D 1-4)
- Is reference material, including up-to-date plans, procedures, and maps, available in the AEOC or provisions made to obtain them from other emergency facilities as needed. (EMG 151.1D 1-4)
- Are transfer and activation procedures prepared? Is training conducted, and the process validated during exercises and drills for shifting responsibilities from the primary command center to the alternate during an emergency? (EMG 151.1D 1-4)

New EOC at a Defense Nuclear Facility

- Has the new EOC received CD-2 approval per DOE O 413.3B Administrative Change 1, after August 1, 2016? If so, it must meet the requirements of para 11.c. of the order and continuing pursuing answers to the following LOIs.
- If the EOC is located within the EPZ, are there analyzes for the habitability of the EOC during radiological and hazardous materials releases? Review analyses to determine thoroughness and correctness.
  - If the facility relies on HEPA and charcoal filters for habitability, are the filters maintained and tested in accordance with the manufacturer's recommendations? Are the filters certified?
  - (Best practice) - Are freon and DOP tests performed on the HEPA and charcoal filters periodically and following maintenance?
  - Is the facility maintained under positive pressure? If so, is this tested periodically?
  - (Best Practice) – Has a tracer gas test been performed for the facility?
- Is the EOC designated an Essential Facility in accordance with the International Building Code or state/regional/local equivalent building code? If so, does it meet the requirements of the applicable building code?
- Can the EOC sustain emergency operations for a minimum of 72 hours during severe events or commercial infrastructure disruptions?
  - Does the facility have a backup emergency diesel generator (EDG)? If so, is the generator maintained and tested as required by NFPA 110, *Standard for Emergency and Standby Power Systems*?
  - Does the EDG have an onsite day tank capacity for 72 hours of operations under nominal loading?
  - Does the facility have emergency food rations (e.g., meals ready to eat (MREs), water, etc.) onsite for the appropriate number of ERO personal?
  - Are there sleeping/resting facilities available for off duty ERO personal?

JIC

- Does the contractor at DOE/NNSA Operational Emergency Hazardous Material Program facilities have provisions in place to establish a Joint Information Center (JIC)?
- Are there procedures in place which govern the decision and activation of the JIC?
- If necessary, does the site have a procedure to convert the facility for use as a JIC in an emergency?
- Is the designated JIC:
  - Available, equipped, maintained and controlled to accommodate members of the news media, DOE/NNSA, contractor, and offsite agency representatives, and to facilitate the preparation and coordination of emergency information release to the public through the news media?
  - Does the JIC provide adequate space, equipment, communications lines, security provisions, and information resources to accommodate personnel (both media and staff) and to accomplish required functions?
- Is the JIC located outside of the EPZ?
- Is an alternate JIC available in the event that the primary JIC becomes uninhabitable?
- Is JIC access control adequate and there is a means to readily identify media representatives and staff?

Alternate JIC

- Does the site have an alternate JIC?
- Are there procedures in place which govern the decision and activation of the alternate JIC?

- Can the alternate JIC perform all of the key functions of the primary JIC?
- Is there monitoring equipment installed or available at the alternate JIC to confirm the habitability of the alternate JIC?
- Is reference material, including up-to-date plans, procedures, and maps, available in the alternate JIC or provisions made to obtain them from other emergency facilities as needed?
- Are transfer and activation procedures prepared? Is training conducted, and the process validated during exercises and drills for shifting responsibilities from the primary JIC to the alternate during a JIC?

Meteorological Equipment

- Does the site maintain meteorological capability to provide real-time onsite/local meteorological data?
- Does the site have access to meteorological expertise for site consequence assessments?
- Does the onsite data collection and processing equipment meet current guidance and standards?
    - Is the equipment sufficient to characterize atmospheric dispersion and model the dose to members of the public over distances commensurate with the magnitude of potential source terms and possible pathways to the atmosphere? (DOE O 458.1 Chg 3).
    - Does the system have a backup power supply? (HDBK-1216-2015 App B)
    - Does the site provide for routine inspection of the data and scheduled calibration and maintenance of the meteorological instrumentation and data acquisition system based on the calibration frequency recommendations of the manufacturers? (HDBK-1216-2015 App B)
    - Are the inspections and calibrations conducted in accordance with written procedures and are the logs of the inspections, maintenance, and calibrations kept and maintained as permanent records? (HDBK-1216-2015 App B).
    - See Appendix B, Chapter 5 of HDBK-1216-2015 for additional LOIs.
- If the EPHA indicates the possibility of a General Emergency, does the site maintain a meteorological modeling capability? If not, does it have access to reliable real-time offsite meteorological data such as NARAC?

Facilities

- Are critical facilities and equipment essential to emergency response appropriately identified?
- Have the critical facilities been evaluated to ensure the habitability of control areas, etc. during an emergency?
- Are the effects of BDBEs on emergency response capabilities at critical facilities mitigated or accepted?
- Are facility systems and installed equipment adequate to support facility functions and level of staffing for an emergency?
- Do the actual function(s) and operating characteristics of specific equipment adequately support the intended function(s) during emergency response?
- Are periodic inspections, operational checks, calibration, preventive maintenance, and testing of equipment and supplies carried out as required in accordance with manufacturer's instructions or industry standards?
- Are inventories of all emergency equipment and supplies maintained with the equipment location identified?
- Are communication systems with site response organizations (ERO) periodically tested?
- Are provisions established to ensure operational compatibility between facility response capabilities and the site/local response organizations?
- If necessary, does the facility have a procedure to convert space(s) for use in an emergency?

- Does the facility provide facilities and equipment adequate to support emergency response, including the capability to notify employees of an emergency to facilitate the safe evacuation of employees from the work place, immediate work area, or both?
- Is the capability to notify employees (within 10 minutes) of an emergency to facilitate the safe evacuation of employees from the work place, immediate work area, or both available?

For DNFs

- Does the contractor at a DOE/NNSA facility identify onsite emergency response facilities such as the primary EOC, control rooms, operational centers, medical facilities, and fire departments?
- For these facilities, does the contractor:
  - Determine whether the facility will be habitable during the emergencies analyzed in the EPHA?
  - Develop compensatory measures for facilities that are not survivable and habitable?
  - Maintain and test safety functions and features to ensure they function as design?
- Has the contractor developed safe shutdown or walkaway strategies for equipment and facilities during an emergency?
- Has the contractor ensured a transition of responsibilities and required actions between normal work activities, incident activities, and recovery operations?
- Does a hazard category 1, 2, or 3 facility have the equipment (along with administrative controls) to monitor accident releases as required for emergency response? (DOE O 420.1C, Attachment 2, Paragraph 3.b.(2)(h))

Good Practice

EOC

- If the EOC is located within the EPZ, are there analyzes for the habitability of the EOC during radiological and hazardous materials releases? Review analyses to determine thoroughness and correctness.
  - Are freon and DOP tests performed on the HEPA and charcoal filters periodically and following maintenance?
  - Has a tracer gas test been performed for the facility?

REVIEW APPROACH

Record Review:
- Review the emergency plan.
- Review the ERAP.
- Review EPIPs for maintaining, activating and staffing the EOC, JIC, and other emergency facilities.
- Review records of maintenance and testing of facilities and any necessary supporting (habitability) systems.
- Review records of inspection and maintenance for PPE.
- Review records of maintenance and testing of site/facility notification systems.
- Review emergency equipment inventory documentation.

Interviews:
- Interview DOE/NNSA Field Element and contractor personnel responsible for managing and maintaining emergency response facilities and equipment.

Observations:

- Conduct selected facility and equipment walkdowns.
- Conduct limited-scope performance tests.

4.11 Notifications and Communications

OBJECTIVES

N&C.1: Initial notifications must be made promptly, accurately, and effectively to all appropriate stakeholders. (DOE Order 151.1D, Attachment 3, Paragraph 11)

N&C.2: Follow-up notifications must be made when conditions change and when the Operational Emergency is terminated. (DOE Order 151.1D, Attachment 3, Paragraph 11)

CRITERIA

DOE sites/facilities/activities must accomplish the following.

1. *See paragraph 9 and 10 of this Attachment for requirements regarding notifications to workers.* (DOE Order 151.1D, Attachment 3, Paragraph 11.a.(1))
2. *Provide prompt emergency notifications to emergency response personnel and response organizations.* (DOE Order 151.1D, Attachment 3, Paragraph 11.a.(2))
3. *DOE site/facility/activity will provide immediate notification and protective actions to affected employees no later than 10 minutes after the protective actions have been identified in accordance with the emergency management plan and related procedures.* (DOE Order 151.1D, Attachment 3, Paragraph 11.a.(3))
4. *Notify the Field Element or appropriate Federal Manager, Headquarters Watch Office, and state, local, and Tribal organizations within 30 minutes of declaration or termination of an Operational Emergency.* (DOE Order 151.1D, Attachment 3, Paragraph 11.a.(4))
5. *If the Emergency Operations System is activated for an incident not categorized as an Operational Emergency, the site/facility/activity must notify the Field Element and Headquarters Watch Office within 30 minutes of the Emergency Operations System becoming operational in accordance with the emergency management plan.* (DOE Order 151.1D, Attachment 3, Paragraph 11.a.(5))
6. *Emergency notification to the Headquarters Watch Office must consist of a phone call providing as much information as is known at the time and be provided electronically with receipt confirmation. If information is unknown at the time of the report, specify so in reporting. The initial notification must include the –*

   (a) description of the emergency;
   (b) date and time emergency was discovered or terminated;
   (c) damage and casualties;
   (d) protective actions implemented;
   (e) potential and actual impacts;
   (f) agencies involved;
   (g) level of public/media attention; and
   (h) contact information.

(DOE Order 151.1D, Attachment 3, Paragraph 11.a.(6))

7. *Notify local, state, Tribal, and Federal authorities of classified Operational Emergencies within 15 minutes of categorization.* (DOE Order 151.1D, Attachment 4, Paragraph 12))
8. *Provide for continuing effective communications among response organizations throughout an emergency.* (DOE Order 151.1D, Attachment 3, Paragraph 11.b.(1))
9. *Provide for communication methods among on-scene responders, emergency managers, and response facilities.* (DOE Order 151.1D, Attachment 3, Paragraph 11.b.(2))
10. *Provide updates to Headquarters based upon the emergency conditions and/or as directed by Headquarters.* (DOE Order 151.1D, Attachment 3, Paragraph 11.b.(3))
11. *Establish provisions to provide updates to workers during an emergency.* (DOE Order 151.1D, Attachment 3, Paragraph 11.b.(4))
12. *Initiate communications checks on classified and unclassified communications systems used for initial notification of the Headquarters Watch Office annually or more frequently as necessary for the communications system (e.g., post-maintenance testing, communication system upgrades, etc.).* (DOE Order 151.1D, Attachment 3, Paragraph 11.b.(5))
13. *Ensure communications among response facilities, field response elements, and offsite command centers by providing a common operating picture the emergency response and shared situational awareness among all teams. This must be accomplished by enabling access to unclassified emergency response information, such as notification forms, emergency status updates, plume projections, significant events data, and field monitoring data.* (DOE Order 151.1D, Attachment 3, Paragraph 11.b.(6))

Performance-based LOIs

During a performance demonstration -

<u>Notifications</u>

- Are initial emergency notifications made promptly, accurately and effectively to workers and emergency response personnel/organizations, appropriate DOE/NNSA elements, and other Federal, tribal, state and local organizations and authorities?
- Do notification and communication systems provide accurate, timely notice of off-normal events to response organizations, facility personnel, and co-located site workers and facilities?
- Are accurate and timely follow-up notifications made when conditions change, when the emergency classification level (as an Alert, Site Area Emergency, General Emergency) is upgraded, or when the emergency is terminated?
- Does the Emergency Director or designee personally approve release of notification information?
- Does the contractor provide prompt initial notification of workers, emergency response personnel, and response organizations, including DOE/NNSA elements and state, tribal, and local organizations?
- Are affected workers notified within 10 minutes of determination of required protective actions?
- Does the contractor notify local, state, Tribal, and Federal authorities of **classified** Operational Emergencies within 15 minutes of categorization?
- Do installed PA, notification, and/or siren systems adequately accomplish the notifications of workers and on-site or neighboring public?
- At a minimum, does emergency notification to the Headquarters Operations Center consist of a phone call providing as much information as is known at the time?
- Does the initial notification include the –
    (a) description of the emergency;
    (b) date and time emergency was discovered or terminated;
    (c) damage and casualties;

(d) protective actions implemented;
(e) potential and actual impacts;
(f) agencies involved;
(g) level of public/media attention; and
(h) contact information?

- Is the same information provided by e-mail or fax, either immediately prior to or following the phone call – with confirmation?
- Are follow-up notifications are made when conditions change or when the emergency classification is upgraded or terminated?
- Does the contractor notify the Field Element or appropriate Federal Manager, Headquarters Watch Office, and state, local, and Tribal organizations within 30 minutes of declaration or termination of an Operational Emergency?

Communications

- Do notification and communication systems provide accurate, timely notice of off-normal events to response organizations, facility personnel, and co-located site workers and facilities?
- Does the contractor:
  - Provide for continuing effective communication among response organizations throughout an emergency?
  - Establish effective communications methods between event scene responders, emergency managers, and response facilities?
  - Forward emergency status reports to the next-higher Emergency Management Team on a continuing basis until the emergency is terminated?
  - Review all reports and releases for classified or unclassified controlled information (e.g., Unclassified Controlled Nuclear Information) prior to being provided to personnel not authorized access to such information, entered into databases not authorized for such information, or transmitted using non-secure communications equipment.
- Is the formally established communication chain for reporting and notification within the facility, site-wide, and to off-site organizations properly followed?
- Do communications systems effectively support management and tracking of evacuation of facility personnel, personnel accountability and assembly?
- Do installed voice communications systems adequately accomplish notification and information exchange processes?
- Are continuous, effective, and accurate communications among response components and/or organizations (e.g., event scene responders, emergency managers, response facilities, and workers who have taken protective actions) reliably established and maintained throughout an OE?
- Do communications lead to a common operating picture and situational awareness?
- Are notifications and key communications properly documented and displayed in emergency response facilities?
- Are logs maintained and other record-keeping methods utilized to support post-event analysis, report production, and a legally defensible chronology of notification and communications activities?
- Is information accurately and efficiently transmitted in an orderly and documented manner throughout the chain of command and between/within emergency facilities?
- Is adequate data obtained and analyzed to support operations staff in assessing and mitigating emergency incidents?

Programmatic LOIs

Notifications

- Is a rapid notification and recall system in place to make initial and follow-up notifications to primary and alternate response staff? Does the system provide for authentication and feedback indicating unsuccessful contact?
- Do follow-up notifications use a pre-arranged and standardized content and format that supports the inclusion of critical information concerning: the nature of the event, description and status; key times; classification and release status (as required); meteorology; protective actions; affected facility; and, notification authority?
- Do emergency procedures formally establish a communication chain for reporting and notification within the facility, site-wide and to off-site organizations?
- Are points of contact for emergency notifications accurate and readily available to response personnel?
- Does information for initial notification include the following:
  - Description of the emergency;
  - Date and time emergency was discovered or terminated;
  - Damage and casualties;
  - Protective actions implemented;
  - Potential and actual impacts;
  - Agencies involved;
  - Level of public/media attention; and
  - Contact information.
- As applicable, are criteria met for emergency planning and notification—in accordance with the referenced requirement? [40 CFR 355.40, Emergency Release Notification]

Communications

- Do emergency procedures formally establish a communication chain for reporting and notification within the facility, site-wide and to off-site organizations?
- Is equipment reliable for communications with emergency organizations and response personnel?
- Are dedicated primary and backup voice communications links provided between key emergency response facilities and sufficient non-dedicated voice communication links are provided to access off-site organizations?
- Are mobile and commercial phone lines available?
- Is a formal system in place to record, sequence, validate, and track the flow and chronology of emergency information?
- Does the site initiate communication checks on unclassified initial notification systems (i.e., phone) at least annually and following maintenance?
- Does the site initiate communication checks on classified initial notification systems (i.e., phone) at least annually and following maintenance?

Good Practice

None.

REVIEW APPROACH

Record Review:
- Review the emergency plan.
- Review EPIPs.

Interviews:
- Interview ERO personnel responsible for notifications and communications.

Observations:
- Exercised.
- Limited Scope Performance Tests.
- Training and Drills

4.12 Emergency Public Information

OBJECTIVES

EPI.1: DOE sites/facilities/activities must provide accurate, candid, and timely information to workers, the media, and the public during an emergency.

CRITERIA

1. Establish and maintain an emergency public information program consistent with the all hazards planning basis. (DOE Order 151.1D, Attachment 3, Paragraph 12.a)

2. Document the emergency public information program in an emergency public information plan or in the emergency management plan. This plan must include–

(1) identification of personnel, resources, and facilities necessary to support emergency public information activities to include identification of a Public Information Officer(s) who will interact with the media during emergencies;
(2) provisions for coordination of information to be released during an emergency;
(3) identification of public information media to be used and monitored, such as web sites, social media, news releases, and news briefings;
(4) identification of a location(s) for the necessary briefings and news conferences regarding the emergency;
(5) identification of training and drills for personnel who will interact with the media;
(6) identification of provisions for coordination of public information activities with offsite response agencies, state, local and tribal governments, and Federal emergency response plans, as appropriate;
(7) for situations involving classified or controlled unclassified information, provisions for information review by an appropriate official before release to ensure that no classified or controlled unclassified information is contained in the announcement;
(8) provisions for initial news releases or public statements to be approved by the Field Element official responsible for emergency public information review and dissemination; and
(9) provisions to coordinate with the Headquarters EOC Public Affairs Watch Officer and/or Office of Public Affairs on information released after the initial release. This includes information released

through news releases and social media. The Headquarters Public Affairs Duty Officer or Office of Public Affairs may delegate this to local level dependent on the incident.

(DOE Order 151.1D, Attachment 3, Paragraph 12.b)

3. *DOE sites/facilities/activities with an Emergency Management Hazardous Materials Program must also maintain staff and expertise to perform emergency public information activities that include –*

   a. public and media inquiry activities;
   b. availability of personnel with technical expertise related to the emergency; and
   c. coordination and direction by the Field Element Manager or appropriate Federal Manager public affairs manager or designee.

(DOE Order 151.1D, Attachment 4, Paragraph 13)

Performance-based LOIs

During a performance demonstration -

- Is information distributed to workers, site personnel, and the public regarding an operational emergency:
  - Accurate, candid, and understandable?
  - Current and timely?
  - Provided to ensure the health and safety of workers and the public?
  - Provided to establish facts, and avoid rumors and speculation?
  - Responsive to public concern and information needs?
  - Consistent with the requirements of the Freedom of Information Act and the Privacy Act?
- Is information released to the public through the news media regarding the emergency accurate and relevant?
- Was an initial press statement released as soon as possible, but within one hour of the event?
- Was the frequency and content of news conferences consistent with information needs of the public and media?
- Were press briefings held with regular frequency and whenever new or breaking information was available concerning emergency conditions, protective actions or response?
- Were technical briefers utilized who are knowledgeable and effective in communicating with the news media?
- Was the EPI staff proactive in obtaining emergency information from the command center or EOC?
- Was information (written and verbal) released to the news media coordinated with DOE/NNSA and other Federal, state, tribal and local response organizations, as appropriate?
- Are rumors and misinformation detected, controlled, and corrected?
- Is accurate information disclaiming rumors and correcting misinformation incorporated in media briefings and press releases as necessary?
- In situations involving classified or unclassified controlled information, does the contractor provide sufficient publicly releasable information to explain the emergency response and protective actions required for the health and safety of workers and the public?
- Are public announcements in areas involving classified or unclassified controlled information reviewed by the appropriate official before release to ensure that no classified or unclassified controlled information is contained in the announcement?
- Does an Authorized Derivative Classifier review news releases or announcements before release to the public to ensure that no information is provided that may present a security risk?

- The DOE/NNSA (as appropriate) Director of Public Affairs and the Headquarters Emergency Manager must be informed of all DOE/NNSA EPI actions. Are these notifications made as soon as practicable?
- Are initial news releases or public statements approved by the Cognizant Field Element official responsible for EPI review and dissemination?
- Does the JIC support response to public inquiries in a timely manner?
- Is the designated JIC available, equipped, maintained and controlled to accommodate members of the news media, DOE/NNSA, contractor, and offsite agency representatives, and to facilitate the preparation and coordination of emergency information release to the public through the news media?
- Does the JIC provide adequate space, equipment, communications lines, security provisions, and information resources to accommodate personnel (both media and staff) and to accomplish required functions?
- Does JIC staffing include trained spokespersons with technical expertise related to the emergency?
- Are provisions in place to detect, correct, and control rumors and misinformation?
- Is JIC access control adequate and there is a means to readily identify media representatives and staff?
- Does the organization prepare relevant information concerning affected facilities, emergency plans, hazards and logistics and is this provided to news media in the JIC?
- Are appropriate visual aids available and used for briefing news media regarding events, impacted areas, consequences and protective actions?
- Do the management team and outside agency representatives effectively, openly, and readily share and coordinate information?

Programmatic LOIs

- Are plans and procedures up-to-date, and do they adequately and accurately describe the roles, responsibilities, and interfaces of DOE/NNSA headquarters, DOE/NNSA Field Element, and contractor EPI personnel?
- Are critical EPI positions identified based on the nature and potential severity of an emergency and are trained personnel available to fill those positions?
- Is there a formal and effective process that facilitates the timely, approved release of accurate information to the public?
- Prior to emergencies, is the public informed of emergency response plans and planned protective actions?
- Is continuing education provided to the area news media for the purpose of acquainting the media with the facility, management personnel, facility hazards, emergency plans, and points of contact?
- In coordination with state and local governments, is information disseminated periodically to the public regarding facility hazards, how they will be alerted and notified of an emergency, what their actions should be in the event of an emergency, and points of contact for additional information?
- Are internal and external organizational relationships for emergency public information documented and maintained in the public information program?
- Are medical personnel associated with the biosafety program involved in the development of materials to be used in news releases to ensure that characterization of the hazard is conveyed accurately?
- Is the EPI program integrated with facility emergency management program plans and procedures?
- Are emergency public information capabilities related to responding to BDBEs, including natural phenomena events, adequately tested?
- Is an EPI Plan in place that provides:

    - Identification of personnel, resources, facilities, and coordination procedures necessary to provide emergency public information?
    - A program for training and exercises of personnel who will interact with the media?
    - A methodology for informing workers and the public of DOE/NNSA emergency plans and protective actions, before and during emergencies?
    - Coordination of public information efforts with state, local, and tribal governments, and Federal emergency response plans, as appropriate?
- Is a list of 24-hour media points of contact available and maintained current?
- Do functions and staff of the EPI organization include:
    - Information collection, coordination, protection, dissemination, and monitoring and analysis of media coverage, public concerns and information needs?
    - Functions and staffing consistent with the nature, severity, duration and public and media perception of the event or condition?
    - Trained spokespersons that provide support in media interface?
    - News writer and other trained personnel who provide support in media services, public inquiry, media inquiry, management and administrative services, and media monitoring?
- Does the EPI program have provisions in place to establish a media center—a designated location where Cognizant Field Element and contractor personnel can conduct the necessary briefings and press conferences regarding an OE?
- When directed by the Cognizant Field Element, is a contractor public information officer assigned to the EPI response team involved in a significant off-site response deployment?
- Is a public information officer assigned to a facility/site or activity emergency response team deployed off site to provide mutual aid to a significant response?
- Following initial news releases and public statements, are updates coordinated with the DOE/NNSA (as appropriate) Director of Public Affairs and the Headquarters Emergency Manager?
- Is an EPI communications system established among Headquarters, Cognizant Field Element, and on-scene locations?
- Does the contractor at DOE/NNSA Operational Emergency Hazardous Material Program facilities have provisions in place to establish a JIC? A JIC is a working location, where multiple jurisdictions gather, process and disseminate public information during an emergency.
- Is the JIC adequately staffed with personnel trained to serve as spokesperson and news writer?
- Are personnel assigned to the JIC to provide support in media services, public inquiry, media inquiry, JIC management and administrative activities, and media monitoring?
- Are persons with technical expertise related to the emergency and with spokesperson training also assigned to the JIC?
- Is the JIC established, directed, and coordinated by the senior Cognizant Field Element public affairs manager or a designee?
- Is an alternate JIC available in the event that the primary JIC becomes uninhabitable?
- The contractor providing personnel for the Departmental emergency response assets [the AMS, the Accident Response Group (ARG), the NARAC, the FRMAC, the Nuclear Emergency Support Team (NEST), the RAP, and the REAC/TS] must apply the Emergency Public Information Plan during deployment of the assets. Are provisions in place to do so?

Good Practice

None.

REVIEW APPROACH

Record Review:
- Review the emergency plan.
- Review the emergency public information plan.
- Review EPIPs.
- Review exercise logs, social media responses, and media releases.

Interviews:
- Interview the DOE/NNSA field element and contractor PI/EPI personnel.
- Interview offsite media and local government EPI exercise participants.

Observations:
- Exercises.
- Limited Scope Performance Tests.
- Training and Drills.
- Walk down the JIC.
- Observe activation and operation of the JIC during an exercise.

4.13 Termination & Recovery

OBJECTIVES

T&R.1: Emergency termination occurs when emergency response activities are terminated, the situation has been stabilized, potential threats to workers, the public, the environment, and national security have been characterized, conditions no longer meet established emergency categorization criteria, and it appears unlikely that conditions will deteriorate.

T&R.2: Prior to termination identify and document in a draft recovery plan the organization (e.g., recovery organization) that will activate and address the actions necessary to restore the site/facility/activity to normal operations.

T&R.3: Conduct an After-Action Review of the Emergency Operations System when it is activated for an actual incident or condition to identify lessons learned and/or corrective actions.

CRITERIA

1. *Establish a predetermined set of criteria for terminating an Operational Emergency.* (DOE Order 151.1D, Attachment 3, Paragraph 13.a.(1))
2. *Coordinate the decision to terminate the emergency with the responding organizations and the Field Element or appropriate Federal Manager, as applicable.* (DOE Order 151.1D, Attachment 3, Paragraph 13.a.(2))
3. *Notify the Headquarters Watch Office and other organizations previously notified when the emergency is terminated.* (DOE Order 151.1D, Attachment 3, Paragraph 13.a.(3))
4. *Predetermined criteria for termination of emergencies must be established.* (DOE Order 151.1D, Attachment 4, Paragraph 14.a)
5. *The decision to terminate an Operational Emergency classified as an Alert, Site Area Emergency, or General Emergency must be based on the perceived need for the ERO to remain fully active to monitor and manage the situation. The decision to terminate an Operational Emergency not requiring classification must be a formal announcement or formal acknowledgement that the*

situation is stabilized and that the response activity is ending or has been substantially scaled back. (DOE Order 151.1D, Attachment 4, Paragraph 14.d)

6. *The recovery organization must include accident investigation, as needed, to ensure accident investigation is conducted in accordance with DOE O 225.1B, Accident Investigations.* (DOE Order 151.1D, Attachment 3, Paragraph 13.a.(3))
7. *Recovery from a terminated Operational Emergency must include: communication and coordination with State, Tribal, and local government and other Federal agencies.* (DOE Order 151.1D, Attachment 3, Paragraph 13.a.(3))
8. *The means must exist for estimating exposure to hazardous materials and for protecting workers and the general public from exposure during reentry and recovery activities.* (DOE Order 151.1D, Attachment 4, Paragraph 14.b)
9. *Recovery procedures must include: dissemination of information to Federal, State, Tribal, and local organizations regarding the emergency and possible relaxation of public protective actions; planning for decontamination actions; establishment of a recovery organization; development of reporting requirements; and establishment of criteria for resumption of normal operations.* (DOE Order 151.1D, Attachment 4, Paragraph 14.c)
10. *If the Emergency Operations System was activated for an Operational Emergency, document the performance review in an After Action Report.* (DOE Order 151.1D, Attachment 3, Paragraph 13.c.(1))
11. *For an Operational Emergency, submit the after action report to the Field Element Manager or appropriate Federal Manager for further dissemination to the Associate Administrator, Office of Emergency Operations, and Program Secretarial Officer(s). This report may be done in conjunction with the Final Occurrence Report in accordance with DOE O 232.2, Administrative Change 1, Occurrence Reporting and Processing of Operations Information.* (DOE Order 151.1D, Attachment 3, Paragraph 13.c.(2))

Performance-based LOIs

During a performance demonstration -

<u>Termination</u>

- Is an OE terminated only after a predetermined set of criteria has been met and termination has been coordinated with off-site agencies?
- Is an approved, predetermined set of criteria for terminating an OE not requiring classification met? Selected general termination criteria that apply may include the following:
  - Recovery plan is developed
  - Recovery staff is identified
  - Event scene/facility is in stable condition
  - Event Scene/facility is isolated and can be preserved
  - Resources are available to begin recovery activities
  - Notification of next of kin of victims
  - Recovery manager and staff have been fully briefed by the ED
  - Notifications are made to DOE/NNSA, other Federal, Tribal, State and local response organizations.
- Does the decision to terminate an OE not requiring classification include formal announcement or acknowledgement that the situation is stabilized and that the response activity is ending or has been substantially scaled back?

- Is the decision to terminate coordinated (by procedure) with the Field Element manager (or appropriate Federal manager)?
- Is the decision to terminate emergency response for an OE made by appropriate ERO members and is it coordinated with all external organizations (i.e., state, local, tribal, DOE Headquarters, other participating Federal agencies) involved in the event?
- Are termination criteria observable associated with the event/condition?
- Is the decision to terminate a classified OE based on the need for the ERO to remain fully active to monitor and manage the situation?
- Is there a declaration that a decision has been reached that the full ERO is no longer needed and the ERO may now begin to reduce its support?
- Is the decision to terminate a biological OE based on the perceived need for the ERO to remain fully active to monitor and manage the situation?
- Are internal and external communications that are associated with termination performed?
- Are provisions in place to perform accident assessment and investigation, consistent with event severity, including: root cause analysis, accident reporting, collection of event documentation, assessment of facility condition, and assessment of contamination effects if relevant?

Recovery

- Does the site ERO establish the recovery organization and determine the resources needed to begin recovery operations prior to terminating the emergency response?
- Did the contractor implement means for estimating exposure to hazardous materials and for protecting workers and the general public from exposure during recovery activities?
- Did the site have adequate: communications and coordination with state, tribal, and local government and other Federal agencies; planning, management, and organization of the associated recovery activities?
- Is the beginning of the recovery phase marked by the termination decision and subsequent notifications that an event no longer constitutes an OE?
- Does the recovery plan address the following, for example:
  - Establishment of a recovery organization
  - Accident assessment and investigation
  - Recovery planning and scheduling
  - Repair and restoration
  - Communications and notifications
  - Resumption of normal activities
- Does the plan and recovery organization address the following areas, as needed:
  - Dissemination of information to Federal, tribal, state, and local organizations?
  - Regarding the emergency and possible relaxation of protective actions?
  - Notifications associated with termination?
  - Accident assessment and investigation?
  - Recovery planning and scheduling?
  - Repair and restoration?
  - Planning for clean-up and decontamination?
  - Waste management?
  - Regulatory (e.g., environmental) compliance?
  - Security, crime scene investigation?
  - Communication and notifications?
  - Development and approval of recovery procedures?
  - Replenish, repair or replace emergency equipment or consumables?
  - Health and safety (e.g., medical follow-up planning)?

  - Reporting requirements; and
  - Criteria for the resumption of normal operations?
- Are recovery planning activities coordinated with Federal, tribal, state and local and other agencies and are they in compliance with the needs of those entities?
- Is the risk of injury to those individuals involved in rescue and recovery operations minimized? [10 CFR 835.1302(a)]
- Do facility personnel estimate exposure to hazardous materials to protect workers and the public during reentry and recovery activities?
- Does the recovery plan return the affected facility/area to normal operations following the termination of the OE developed by the recovery organization and does it depend on (i.e., is commensurate with) the severity and nature of the emergency event or condition?
- Did the contractor at DOE/NNSA Operational Emergency Hazardous Material Program facilities have the means for estimating exposure to hazardous materials and for protecting workers and the general public from exposure during reentry activities?
- Does operating management weigh actual and potential risks against the benefits to be gained? [10 CFR 835.1302(b)]
- Is no individual required to perform a rescue action that might involve substantial personal risks? [10 CFR 835.1302(c)]
- Is each individual authorized to perform emergency actions likely to result in occupational doses exceeding the values of the limits provided at 10 CFR835.202(a) trained in accordance with 10 CFR835.901(b) and briefed beforehand on the known or anticipated hazards to which the individual will be subjected? [10 CFR 835.1302(d)]
- Does the organization follow DOE guidelines for Emergency Exposure Situations?
- DOE G 441.1-1A identifies regulatory provisions and recommended guidance documents for achieving compliance with 10CFR835? For emergency exposure situations, DOE G 441.1-1A identifies DOE O 151.1C as the guidance document. •DOE G 151.1-1, Volume IV provides guidance in the form of dose criteria and judgment factors for three emergency exposure situations: saving of human life, recovery of deceased victims; and protection of health and property. [10CFR835.1302; DOE G 441.1-1A; DOE G 151.1-1, Volume IV]

Programmatic LOIs

<u>Termination</u>

- Are the authorities, responsibilities, and lines of communication for termination decisions clearly spelled out in procedures (e.g., roles and responsibilities of the Incident Commander and Emergency Director)?
- Is there an approved, predetermined set of criteria for terminating a classified OE [e.g., an airborne release of (or loss of control over) hazardous material]? Selected termination criteria may include the following:
  - Recovery plan is developed;
  - Recovery staff is identified;
  - Event scene/facility is in stable condition;
  - Event scene/facility is isolated and can be preserved;
  - Resources are available to begin recovery activities;
  - All releases of hazardous materials are ended or below level of regulator concern;
  - Accountability of all personnel is complete;
  - Contaminated areas are identified, isolated and secured;
  - All injured and contaminated personnel have been treated and transported;
  - Notification of next-of-kin of victims;

  - Protective actions have been adjusted according to extended conditions;
  - Recovery manager and staff have been fully briefed by the Emergency Director; and
  - Notifications are made to DOE, other Federal, state, and local response organizations.
- Do termination criteria represent the decision criteria to be satisfied?
- Are termination criteria for hazardous biological material release OE similar to an OE that requires classification, such as the release of toxic or radioactive materials?

Recovery

- Are the authorities, responsibilities, and lines of communication for reentry and recovery decisions clearly spelled out in procedures (e.g., roles and responsibilities of the Incident Commander and Emergency Director)?
- Do contractor plans ensure the following:
  - Coordination of termination decision with state, tribal, and local agencies and organizations responsible for off-site emergency response and notification?
  - Establishment of criteria for resumption of normal operations?
  - Do procedures for recovery also include provisions for investigation of the root cause(s) of the emergency and corrective action(s) to prevent recurrence in accordance with Departmental requirements?

After Action Report

- Was an After-Action Report, documenting the critique of the response to the emergency, performed following an event, which resulted in EOS activation?
- Did the evaluation include the following:
  - Data collection and review.
  - Reconstruction of the sequence of events.
  - Interviews to validate or complete the event/response description.
  - Analysis of events, decisions, and response actions.
- Did the After-Action Report analysis include a tabletop response/walkthrough?
- Was the After-Action Report analysis based on the same criteria that are used to evaluate response during exercises (including, for example, decisions regarding categorization and classification and implementation of protective actions)?
- Does the After-Action Report identify corrective actions and lessons learned from the event?
- Have these items been appropriately entered into the site's corrective action program?
- Have corrective actions been tracked and implemented to closure?
- Did the lessons learned lead to actions to improve the EOS?
- Does an After-Action Report document the results of the performance evaluation following an EOS activation?
- Was the After-Action Reports submitted to the Field Element Manager for further dissemination (to the Program Secretarial Officer(s), and the Associate Administrator, Office of Emergency Operations)?
- Does each activated Emergency Management Team submit a final report on the emergency response to the Emergency Manager for submission to the Director, Office of Emergency Operations, following termination of emergency response, and in conjunction with the Final Occurrence Report (see DOE M 231.1 2).

Good Practice

- None.

REVIEW APPROACH

Record Review:
- Review the emergency plan.
- Review termination and recovery procedures.
- Review termination and recovery documents from an exercise or actual event.
- Review the recovery plan.
- Review the After-Action Report.
- Review records associated with corrective actions and lessons learned identified in the After-Action Report, including training, drills, and exercises.

Interviews:
- Interview personnel responsible for making decisions to terminate an event and initiate recovery operations.
- Interview personnel responsible for developing and approving the recovery plan.
- Interview personnel responsible for developing and approving the After-Action Report.
- Interview personnel responsible for implementing improvement items identified in the After-Action Report.

Observations:
- Exercises
- Limited scope performance tests
- Training and drills

4.14 Readiness Assurance

OBJECTIVES

RA.1: DOE sites/facilities/activities must participate in a formal Readiness Assurance Program that establishes a framework and associated mechanisms for assuring that emergency plans and procedures and resources are adequate by ensuring that they are sufficiently maintained, exercised, and evaluated, and that appropriate and timely improvements are made when identified. The Readiness Assurance Program consists of evaluations, improvements, and the ERAP. Evaluations consist of assessments, exercises, and **performance indicators**. (DOE Order 151.1D, Attachment 3, Paragraphs 14 & 14.a)

CRITERIA

1. *DOE sites DOE sites/facilities/activities must conduct assessments to ensure that emergency plans, procedures, emergency response activities, and resources are adequate and sufficiently maintained. (a) Conduct self-assessments annually. The self-assessment must address all program elements; however, the scope of each program element assessment does not have to include all aspects of the associated programmatic or response tasks each year. This determination must be based upon the complexity of the program and ensure that all program elements are fully assessed and/or validated through exercises over a five-year period.* (DOE Order 151.1D, Attachment 3, Paragraph 14.a.(1))
2. *DOE sites/facilities/activities must participate in a program of performance indicators.* (DOE Order 151.1D, Attachment 3, Paragraph 14.a.(3))
3. *DOE sites/facilities/activities must identify improvements that consist of corrective actions and lessons learned. Corrective Actions.*

(a) Develop corrective actions for findings identified during evaluations, assessments, drills, exercises, and actual emergencies.
(b) Use a formal tracking system to track completion of corrective actions. This tracking system may be part of a site/facility/activity action tracking system.
(c) Develop a corrective action plan for findings documenting corrective actions, due dates, and assignees within 45 calendar days of the assessment report or After Action Report.
(d) Submit corrective action plans for findings from Federally-directed or external assessments for approval to the Field Element Manager or appropriate Federal Manager.
(e) Submit corrective action plans, upon request, for findings from contractor-initiated assessments to Field Element Manager or appropriate Federal Manager.

(DOE Order 151.1D, Attachment 3, Paragraph 14.b.(1))

4. *DOE sites/facilities/activities must identify improvements that consist of corrective actions and lessons learned. Lessons Learned.*

   (a) Use a system for incorporating and tracking lessons learned from training, drills, actual responses, and the site/facility/activity-wide lessons learned program.
   (b) Review lessons learned from emergency management program activities under DOE Order 210.2A, DOE Corporate Operating Experience Program.
   (c) Review lessons learned and best practices from the Office of Enterprise Assessments annual lessons learned report, which provides opportunities for improving DOE emergency management programs.

(DOE Order 151.1D, Attachment 3, Paragraph 14.b.(2))

5. *DOE sites/facilities/activities must develop an ERAP using the format and content guidelines provided by the Program Secretarial Officer that was developed in coordination with the Associate Administrator, Office of Emergency Operations. The ERAP must –*

   (a) highlight program status, including significant changes in the emergency management program (e.g., all hazards planning basis, organizations, and exemptions);
   (b) include a summary of the THIRA;
   (c) document evaluation results and the status (e.g., open/unresolved or closed) of associated corrective actions;
   (d) identify what the goals were for the fiscal year that ended and the degree to which those goals were accomplished;
   (e) identify the goals for the next fiscal year; and
   (f) be submitted to the Field Element Manager or appropriate Federal Manager for approval.

(DOE Order 151.1D, Attachment 3, Paragraph 14.c.(1))

6. *The Field Element Manager or appropriate Federal Manager must prepare and submit a consolidated ERAP covering the sites/facilities/activities under its supervision to the Program Secretarial Officer and Associate Administrator, Office of Emergency Operations by November 30 each year. In order to meet this date, DOE sites/facilities/activities must submit for approval the ERAP to the Field Element Manager or appropriate Federal Manager by October 15 of each year unless another date is established between the Field Element Manager/appropriate Federal Manager and the site/facility/activity.* (DOE Order 151.1D, Attachment 3, Paragraph 14.c.(2))

7. *DNFs must perform the following.*

   (1) Conduct causal analysis to determine corrective actions for findings identified as a result of noncompliance for life safety.
   (2) Develop formal corrective action plans for identified findings. The corrective action plan must be approved by the Field Element Manager. The Field Element Manager must ensure effective corrective actions are tracked, identified, and implemented.
   (3) Evaluate the effectiveness of corrective actions through verification and validations conducted by an independent reviewer.
   (4) Identify compensatory measures for findings until causal analysis is performed and corrective actions are identified and implemented.

(DOE Order 151.1D, Attachment 4, Paragraph 1.j.(1)-(4))

Performance-based/Programmatic LOIs

- Has the DOE/NNSA contractor implemented a readiness assurance program consisting of evaluations, improvements and ERAPs?
- Has the site/facility established an improvement program that provides assurances that appropriate and timely improvements are made in the emergency management program in response to needs identified through coordinated emergency planning, resource allocation, program assistance activities, evaluations, training, drills, and exercises?
- Does the readiness assurance program appropriately integrate evaluations (e.g., assessments and exercises) with improvement programs (e.g., issue management) to achieve timely program improvements?
- Have readiness assurance activities been scheduled and executed?
- Have reasonable schedules (e.g., documentation submittals, reviews, and approvals; preparedness and readiness assurance activities) been established and enforced to ensure that readiness assurance activities are initiated, completed, and repeated in a timely and efficient manner?
- Has the contractor implemented an effective formal and structured readiness assurance program consisting of evaluation and improvement programs, and documentation of the readiness of the emergency management program based on emergency planning and preparedness activities and the results of the readiness assurance program (i.e., in ERAPs)?

<u>Self-Assessment</u>

- Does the contractor conduct an annual self-assessment of their emergency management programs?
- Is a self-assessment schedule established and implemented at both the facility and site level?
- Are program and exercise evaluations (including appraisals and assessments) based on specific standards and criteria, issued by the Director, Office of Emergency Operations?
- Do assessment reports provide evidence that the standards and criteria were effectively applied in performing the assessment?
- Are personnel implementing the assessment and performance measurement program processes adequately trained and qualified to perform assigned oversight activities?
- Do formal evaluation reports document evaluation results and specific findings?
- Are assessment activities sufficiently performance-based, including an appropriate focus on observation of work, inspection of field conditions, review of evidence of compliant and effective performance, and effectiveness of corrective actions for previously identified deficient conditions?
- Do assessments and performance measurement activities adequately and accurately evaluate the as-found performance conditions of the essential program elements?

Performance Indicators

- Is there evidence that performance indicators have been used to identify and implement necessary improvements to the program?
- Are adequate trending analyses performed in accordance with structured/formal processes?
- Is performance data being sufficiently analyzed, with appropriate conclusions drawn and presented to management?
- Are needed and appropriate actions to address performance issues identified and taken?

Corrective Actions

- Are the full extent of deficiencies in programs or performance identified during assessment activities communicated to appropriate management for resolution through a structured issues management process?
- Do improvement programs prepare corrective action plans and establish and maintain a tracking system to monitor and verify correction of findings from all program and exercise evaluations, or from actual responses?
- Are issues (e.g., deficiencies or findings) identified and appropriately categorized (within the emergency management and site issues management processes) such that issues receive the right level of attention and rigor?
- Are issues appropriately identified, validated, documented, communicated, classified, evaluated, tracked and resolved?
- Are appropriate, timely improvements are made in response to needs identified through coordinated and comprehensive emergency planning; resource allocation; training, drills, and exercises; and evaluations?
- Does continuous improvement in the emergency management program result from implementation of corrective actions for findings in all types of evaluations, including both self-assessments and external evaluations?
- Are corrective action plans developed?
- Are corrective actions completed as soon as possible?
- Are corrective actions addressing revision of procedures or training of personnel completed before the next annual self-assessment of the program? Next annual exercise?
- Did the corrective actions resolve the original finding or deficiency?

Lessons Learned

- Is there evidence the site/facility participated in the DOE/NNSA Corporate Lessons Learned Program (such as review and disposition of Lessons Learned or implementation of changes based on a published Lessons Learned)?
- Is there evidence the site/facility incorporated and tracked lessons learned from training, drills, or actual responses (for example, completed actions based on feedback from a drill or actual response)?

Causal Analysis

- Based on the risk and priority of the issue (issues of higher significance), has a thorough analysis of the underlying cause of issues been performed? (DOE Order 226.1B, Attachment 1, Paragraph 2.b.(3).(b).(1))
- Is the causal analysis used to develop a comprehensive corrective action plan for the identified causes?

Programmatic LOIs

- Has the site/facility implemented an effective, formal and structured readiness assurance program consisting of evaluation and improvement programs?
- Does the site have an effective and reliable improvement program that is ensured through sustained management commitment to continuous improvement of the emergency management program?
- Does the evaluation program assure that emergency plans, implementing procedures, and resources are adequate and sufficiently maintained, exercised, and evaluated?
- Is there established a program for the identification and protection of vital records, those records needed by agencies for continuity of operations? (36 CFR 1236, Management of Vital Records, Chapter XII, Subpart A and B)

<u>Evaluations - Self-assessments</u>

- Does the evaluation program assure that emergency plans, implementing procedures, and resources are adequate and sufficiently maintained, exercised, and evaluated?
- Has the contractor established appropriate, formal processes and procedures for conducting effective self-assessments?
- Have adequate guidance and support tools; such as checklists, templates, and databases, been provided?
- Do self-assessment processes encourage and facilitate the involvement of workers, supervisors, and managers to develop assessment skills and abilities?
- Has the contractor defined adequate requirements for experience, knowledge, skills and abilities for personnel implementing assessment and performance measurement activities?
- Are self-assessment results documented in the ERAP submitted to the Cognizant Field Element?
- Does the site, facility, or activity conduct an annual self-assessment of their emergency management program?
- Does the self-assessment schedule appropriately address programmatic elements at the site and facility levels (and activity level if applicable)?
- Is the self-assessment schedule adequately integrated with the drill and exercise programs such that programmatic elements are sufficiently evaluated over a five-year period?
- Are program evaluations (including appraisals and assessments) based on specific standards and criteria, issued by the Director, Office of Emergency Operations?
- Are records maintained of readiness assurance self-evaluations (e.g., program or exercise self-assessments) and any related findings?
- Do assessment procedures provide appropriate linkages to the issues management, corrective action, and reporting processes?

<u>Performance Indicators</u>

- Does the contractor site/facility participate in a program of performance indicators (including performance measures and metrics) to capture and track objective data regarding the performance of emergency management programs in key functional areas?
- Has the contractor established appropriate and formal processes and procedures for identifying, monitoring, analyzing data measuring the performance of facilities, programs, and organizations and for identifying and implementing needed actions and opportunities for performance improvement?
- Are the chosen performance indicators realistic indicators of program performance?
- Are the results shared with the Cognizant field element and Director Office of Emergency Operations?

- Does performance indicator program (procedure) provide appropriate linkages to the issues management, corrective action, and reporting processes?
- Have the appropriate performance indicators been selected to effectively measure performance and identify adverse trends in a timely manner to ensure prompt mitigation and corrective actions?
- Are adequate trending analyses performed in accordance with structured/formal processes?
- Is the performance indicator program periodically reviewed to ensure the most appropriate set of data and data analysis parameters are being employed?

Corrective actions

- Is there a structured and effective issues management process capable of capturing issues from many sources and conducting analyses on risk significance, establishing priorities, developing resolutions and corrective actions, and tracking completion of the actions?
- Does the issues management process identify causes and provide effective recurrence controls?
- Do procedures and processes provide for issue (e.g., deficiencies or findings) identification and appropriate categorization (within the emergency management and site issues management processes) such that issues receive the right level of attention and rigor?
- Do procedures establish a process for analyzing issues, determining corrective actions, assigning actions to responsible individuals, and tracking the actions to closure?
- Do procedures establish a mechanism to document the completed corrective actions?
- Do procedures establish a process to verify that completed corrective actions are effective in correcting the cause of the issue?
- Do procedures govern the preparation of corrective action plans?
- Does completion of corrective actions include a verification and validation process (independent of those who performed the corrective action) that verifies that the corrective action has been put in place, and validates that the corrective action has been effective in resolving the original finding?

Lessons Learned

- Does the site/facility participate in the DOE/NNSA Corporate Lessons Learned Program?
- Does the readiness assurance program include a system for incorporating and tracking lessons learned from training, drills, actual responses as well as a site-wide lessons learned program?
- Does the improvement program include a system for incorporating and tracking lessons learned from training, drills, actual responses, and a site-wide lessons learned program?
- Does an established improvement program ensure that relevant lessons learned (i.e., complex-wide; other non-DOE sources) are received at the facility, are reviewed for applicability, and incorporated in the emergency management program as appropriate?

ERAP

- Has the site/facility submitted an ERAP to the Cognizant Field Element each year?
- Did this report identify what the goals were for the fiscal year that ended, coincident with the due date for this report (e.g., September 30), and the degree to which these goals were accomplished?
- Did this report also identify the goals for the next fiscal year (e.g., which starts on October 1)?
- Does the ERAP highlight program status, including significant changes in emergency management programs (i.e., planning basis, organization, facility mission, exemptions) and comparison of previous ERAP goals, milestones and objectives to accomplishments?
- Does the ERAP document evaluation of results and the status of associated corrective actions, including site/facility self-assessments and performance measures?

- Does the ERAP contain a sufficient level of accurate information and analysis to provide management at all levels with adequate tools for gauging emergency management program readiness?
- Is an accurate site (i.e., facilities consolidated into one site document) ERAP developed and submitted to the responsible DOE Cognizant Field Elements?

Causal Analysis

- Is there a structured and effective process for establishing the depth and rigor of causal analysis?
- Do procedures base the causal analysis on the risk and priority of the issue (issues of higher significance) and establish a method or methods for conducting analysis of the underlying cause of issues been performed? (DOE Order 226.1B, Attachment 1, Paragraph 2.b.(3).(b).(1))

Good Practice

None.

REVIEW APPROACH

Record Review:
- Review the self-assessment schedule – planned and completed.
- Review completed self-assessment reports (over the past 2-3 years).
- Review DOE/NNSA Field Element and self-assessment reports.
- Review assessments conducted by DOE/NNSA Headquarters organizations and DOE/NNSA Field Element Personnel.
- Review the contractor assurance system program description and implementing procedures.
- Review any specific emergency management self-assessment program plans or procedures.
- Review corrective action tracking mechanisms
- Review the status of implementation of selected corrective actions developed in response to findings identified during the previous Independent Oversight inspection.
- Review open and closed corrective action packages.
- Review closure documentation for findings from internal and external evaluations.
- Review corrective action tracking mechanisms.
- Review issues management, corrective action and root cause analysis procedures.

Interviews:
- Interview personnel responsible for the contractor's self-assessment program.
- Interview personnel who have conducted self-assessments.
- Interview DOE/NNSA Field Element personnel, as appropriate.
- Interview personnel responsible for analyzing findings, developing corrective actions, and managing closeout of findings (including verification and validation)?

Observations:
- Contractor self-assessment.

4.15 Exercises

OBJECTIVES

EX.1: DOE sites/facilities/activities must participate in a formal Readiness Assurance Program that establishes a framework and associated mechanisms for assuring that emergency plans and procedures and resources are adequate by ensuring that they are sufficiently maintained, exercised, and evaluated, and that appropriate and timely improvements are made when identified. The Readiness Assurance Program consists of evaluations, improvements, and the ERAP Evaluations consist of assessments, **exercises,** and performance indicators. (DOE Order 151.1D, Attachment 3, Paragraphs 14 & 14.a)

CRITERIA

1. *DOE sites/facilities/activities must conduct an annual site-level exercise to test and validate emergency plans and procedures.*
   (a) The exercise program must be consistent with the Department of Homeland Security Exercise and Evaluation Program.
   (b) Rotate the scenario for the annual exercise among the hazards and risks identified in the all hazards planning basis.
   (c) Provide the annual exercise schedule to the Field Element Manager or appropriate Federal Manager.
   (d) Prepare an exercise plan.
   (e) Submit the exercise plan for the annual evaluated site-level exercise to the Field Element Manager or appropriate Federal Manager for approval no less than 30 calendar days prior to the exercise.
   (f) After action reports must include the results of the evaluation to include findings, issues, and improvement items, and be prepared and submitted within 45 calendar days of the exercise. After action reports for the annual exercise must be submitted to the Field Element Manager or appropriate Federal Manager.

(DOE Order 151.1D, Attachment 3, Paragraph 14.a.(2))

8. *In addition to the readiness assurance requirements contained in Attachment 3, DOE sites/facilities/activities with an Emergency Management Hazardous Material Program must also establish and maintain a site-level exercise program that validates its emergency response capability to the hazards identified in EPHAs. These DOE sites/facilities/activities must accomplish the following.*
   a. Develop a formal exercise program that includes –
      (1) a matrix that identifies planned exercises over the next five years and elements tested;
      (2) rotation among scenarios identified in the Technical Planning Basis;
      (3) exercise scenarios involving radiological hazardous materials, if applicable;
      (4) a method for determining the appropriate number of exercises, and rotation of exercise scenarios among hazardous material facilities over a five-year period, to ensure demonstration of responder proficiency;
      (5) invitation of offsite responding agencies and national assets, (e.g., Centers for Disease Control, USDA, etc.) every three years;
      (6) severe event scenarios every five years;
      (7) test of design control and/or mitigation features in multiple facilities;
      (8) demonstration of ERO capability; and

(9) integration with local, State and Federal agencies.

b. Develop challenging exercises based on scenarios identified in the Technical Planning Basis that –

(1) involve high-consequence scenarios;

(2) involve multiple response elements; and

(3) result in offsite effects.

c. In order to test and demonstrate the site/facility/activity integrated emergency response capability, conduct the annual site-level exercise as a full-scale exercise involving site-level emergency response organization elements and resources. Invite some offsite response organizations to participate to participate in a full-scale or full participation exercise every three years. This exercise must –

(1) use a scenario from the spectrum of potential Operational Emergencies identified in EPHAs (rotated among facilities and type of incident and/or initiator), and

(2) include demonstration of protective actions.

d. Conduct a site-level exercise for a severe incident as postulated by the all-hazards planning basis no less than once every 5 years. This exercise must involve the –

(1) release of hazardous materials at more than one facility/activity, and

(2) disruption to site infrastructure, such as power, telecommunications, or roadways, or the significant delay of mutual aid.

e. EPHA facilities with facility-level EROs must evaluate facility-level emergency response capability and proficiency annually by initiating response to simulated, realistic emergency situations/conditions in a manner that, as nearly as possible, replicates an integrated emergency response to an actual event.

f. DOE OST Host Sites must conduct an exercise no less than once every 5 years that assesses and validates emergency response training related to the Host Site's ability to respond effectively to an OST emergency at the Host Site.

g. DOE sites that do not have any DNFs may request participation of the Department's Radiological Emergency Response Assets. Requests for their participation must be made to the Director, Office of Nuclear Incident Response, no less than 6 months prior to the exercise.

h. DOE sites with a Defense Nuclear Facility or Facilities must conduct an exercise annually involving the Operations staff, Emergency Management staff, and Incident Command staff that includes –

(1) elements of the EOC staff for Operational Emergencies;

(2) regardless of the scope or mechanism, evaluate Operations staff, Emergency Management staff, Incident Command staff, and EOC staff for continuous improvement.

i. DOE sites with a Defense Nuclear Facility or Facilities must conduct an exercise involving one or more of the Department's Radiological Emergency Response Assets no less than once every 3 years. Requests for participation of the Department's Radiological Emergency Response Assets must be made to the Director, Office of Nuclear Incident Response, no less than 6 months prior to the exercise.

(DOE Order 151.1D, Attachment 4, Paragraph 15.a.)

Performance-based/Programmatic LOIs

- Does the site conduct an annual full-scale exercise?
- Do the EPHA facilities exercise their emergency response capability annually?

- Does the exercise program involve testing emergency response capabilities by initiating response to simulated, realistic emergency events/conditions in exercises of varying scope over the 5-year period?
- Do the exercises rotate appropriately through the significant events and event types identified in the EPHAs?
- Are multiple facilities involved over time so that the entire site/facility ERO is exercised and evaluated?
- Are severe event scenarios conducted with sufficient regularity?
- Are appropriate offsite agencies invited to participate (at least every three years)?
- Are all the ERO capabilities required to execute the site's Emergency Plan exercised over time?
- Are programmatic elements comprehensively validated over a five-year period?
- Is integration with local, state and Federal agencies sufficiently demonstrated and evaluated?
- Is the exercise program based on the identified significant threats and hazards to the site/facility/activity?
- Does the schedule of exercises include: security scenario events in order to test the interfaces between site security and the facility/site ERO?
- Do site-level ERO elements and resources participate in a minimum of one exercise annually?
- Is this site exercise designed to test and demonstrate the site's integrated emergency response capability?
- For multiple-facility sites, are the exercises rotated among the site facilities (so that all facilities demonstrate integrated response capability over time)?
- Does the contractor, at a minimum, conduct building evacuation exercises consistent with Federal regulations [e.g., (41 CFR 102 74-360)], local ordinances, and National Fire Protection Association Standards?
- Are protective action exercises conducted at least annually to ensure that employees are able to demonstrate protective actions at their work area safely?
- Does the exercise program account for monitoring the strengths and weaknesses of the program (e.g., identified areas for improvement or corrective actions from previous exercises)?
- Does the multi-year exercise schedule appropriately rotate the exercises through the hazards and risks identified in the EPHA and authorization basis?
- Does the exercise program validate facility- and site-level emergency management program elements by initiating response to simulated, realistic emergency events/conditions in a manner that, as nearly as possible, replicates an integrated emergency response to an actual event?
- Does the exercise program also include provisions for incorporating objectives in each exercise that are designed to validate revised plans/procedures, implemented corrective actions, and program improvements?
- Does the exercise program include provisions for evaluating all exercises and establish a critique process that includes gathering and documenting observations of participants?
- Are the site/facility exercises sufficiently challenging to provide a meaningful test of the anticipated hazardous material events and emergency response capabilities?
- Has the site documented a method for determining the appropriate number of exercises, and rotation of exercise scenarios among hazardous material facilities over a five-year period, to ensure demonstration of responder proficiency?
- Do the exercise scenarios reflect current site/facility/activity-specific hazards; correlating technically with the facility EPHA?
- Are the exercise scenarios technically accurate in terms of operations, radiological, chemical, biological and meteorological data?
- Are the exercise scenarios based on high consequence events from the site/facility/activity EPHA?
- Have multiple response elements been involved and evaluated over time?

- Do the annual exercises ensure that offsite response capabilities are tested by ensuring the scenarios involve offsite effects (when applicable)?
- Does the full-scale exercise scenario contain sufficient complexity to demonstrate the integration of the site and facility EROs?
- Are off-site response organizations invited to participate in site-wide exercises at least once every three years?
- Do offsite agencies participate in the full-scale exercise frequently enough to demonstrate that the offsite agencies can effectively operate with the site in an integrated manner?
- Are the scenarios chosen from the spectrum of scenarios in the site/facility EPHAs?
- Are the scenario types varied adequately to demonstrate the site's ability to respond to events involving the spectrum of hazardous materials and potential events on the site?
- Does this plan include exercises related to responding to BDBEs that involve natural phenomena events?
- Has each EPHA facility conducted annual exercises?
- Have the exercises tested the ability of the facility operating and emergency management personnel to respond to an escalating event?
- Did the DNF(s) conduct an exercise annually involving the Operations staff, Emergency Management staff, and Incident Command staff; including elements of the EOC staff for Operational Emergencies?
- Regardless of the scope or mechanism, did the Defense Nuclear Facility or Facilities evaluate Operations staff, Emergency Management staff, Incident Command staff, and EOC staff for continuous improvement?
- Did the exercises include progression from facility operation through abnormal event (including abnormal response) to emergency?
- Do the exercises demonstrate the integration of operations with emergency response?
- Do the exercises present the operators and emergency responders with a progression of failures that correspond to the scenarios analyzed in the EPHA (and other related safety document such as the DSA)?
- Do the exercises demonstrate that facility operating, alarm response, and abnormal procedures are adequately integrated with emergency response procedures?
- Do the exercises challenge the operators and provide opportunities to demonstrate their proficiency in responding to abnormal and emergency events, including the progressive failure of safety systems?
- Have the exercises been used to validate the host site's ability to respond to an OST emergency on the site, including effective integration with the OST personnel?
- Does the schedule of exercises include periodic participation by appropriate DOE or NNSA radiological response assets?
- Have exercises involving one or more of the Department's radiological emergency response assets been conducted at least once every three years. These assets include the ARG, NEST, FRMAC, AMS, NARAC, REAC/TS, and RAP?

<u>Exercise Planning</u>

- Does exercise planning and preparation use an effective, structured approach that includes documentation of specific objectives, scope, time lines, injects, controller instructions, and evaluation criteria for realistic scenarios?
- Does the exercise plan address the core capabilities that are being exercised and evaluated?
- Are annual emergency response exercises supported by documentation that contains, but is not limited to, the exercise scope, its objectives and corresponding evaluation criteria, a narrative description of the scenario, timeline, and a list of participants? Is such documentation for site exercises approved by the Cognizant Field Element?

- Are exercises fully documented by an exercise plan that includes: specific exercise objectives, scope, scenario, participants, simulations, timelines, inject messages, technical data, safety and security provisions, controller instructions, and evaluation criteria?
- Does the exercise plan contain sufficient information for effective conduct, control and evaluation of the exercise? Are roles, responsibilities, and interfaces among exercise participants (i.e., players/responders, controllers, evaluators, and observers) clearly addressed? Are the provisions for exercise conduct and control and evaluation clearly identified? Are provisions for exercise evaluation clearly identified?
- Does the site/facility complete the exercise package and provide to DOE or NNSA line management and the DOE Director of Emergency Operations in sufficient time before the conduct of the exercise to allow for review and comments by DOE or NNSA line management and the DOE Director of Emergency Operations?
- Does the scenario reflect current facility-specific hazards and is it technically accurate in terms of operations and hazardous material data?
- Is technical data that supports the scenario (e.g., operational, radiological, chemical, biological, medical, meteorological) technically accurate and clearly and unambiguously presented?
- Is the exercise scope, duration, location, and extent of play sufficient to allow objective evaluation of the core capabilities? That is, will the exercise as planned meet its objectives?
- Does each exercise have specific objectives and is it fully documented (e.g., in scenario packages that include objectives, scope, timelines, injects, controller instructions, and evaluation criteria)?
- Is the scenario consistent with the set of exercise objectives, explicitly supporting an evaluation/validation of each objective?
- Are exercise objectives identified for each of the core capabilities being exercised?
- Have participant responsibilities (e.g., players, controllers, evaluators, simulators, and observer) been adequately addressed in the plan?
- Is the exercise scenario plausible?
- Will (or did) the exercise achieve the identified objectives?
- Does the exercise scenario provide a detailed timeline of events (such as a master sequence of events list)?
- Is the scenario sufficiently well-defined such that player and controller actions can be controlled to achieve the exercise objectives?
- Is exercise planning effectively coordinated among on-site and off-site organizations or groups regarding their respective participation and exercise objectives? Are any limitations or simulations regarding their participation identified and documented?
- Are simulations and limitations pertaining to participants and exercise activities clearly identified and documented?
- Do injects/messages contain accurate, unambiguous, and non-prompting information and technical data for the players/responders and provide proper direction for the exercise?
- Do exercise simulations (and cues) provide enough detail to allow players to react to information and situations as they are presented – as if the incident were real?
- Does the exercise scenario appropriately base the players response on the emergency plan and implementing procedures?
- Does the exercise plan address the process for post-exercise analysis and evaluation (such as, hot washes, debriefings of controllers and evaluators, and completion of exercise evaluation guides?
- Is security of the exercise scenario properly managed, and is pre-staging of players and/or prior knowledge of scenario material by players effectively prevented?
- Does the exercise plan or procedure define minimum program standards for performance (i.e., acceptable performance during exercises (or actual events)?

Exercise Conduct

- Is each exercise conducted, controlled, evaluated, and critiqued effectively and reliably?
- Does coordination among participants include provisions for exercise initiation, interruption and termination?
- Are preparations, including participant briefings, safety provisions, staging of simulation props, positioning of controllers/evaluators, and establishing of initial conditions completed prior to exercise initiation?
- Are controllers and evaluators provided generic and exercise-specific training?
- Are controllers and evaluators provided training on the scenario package and safety and security/safeguards provisions?
- Are controller organizations adequately staffed and positioned for effective exercise conduct/control?
- Do controllers conduct/control the exercise in accordance with the exercise plan package?
- Do controllers permit free play when free play would not interfere with the scenario?
- Do controllers prevent interference and/or prompting by non-responders?
- Are activity simulations sufficiently realistic to provide confidence that the activity could have been performed during a real emergency?
- Do players/responders perform their respective functions, initially and throughout the exercise, in a professional manner as if the situation were an actual emergency?

Exercise Evaluation

- Are exercises evaluated?
- Do specific exercise objectives provide the basis for evaluating/validating the performance of response capabilities by each participating organization?
- Does the site use an established set of exercise evaluation guides that have been tailored for the specifics of the site program?
- Are exercise evaluation criteria facility-specific, based on existing plans and procedures, and correlated with the exercise objectives?
- Is there an established critique process, which includes gathering and documenting observations of the participants?
- Are notifications and communications evaluated during every exercise?
- Is the evaluator organization sufficiently staffed to evaluate performance and key decision-making of the responders in satisfying the exercise objectives?
- Do evaluators display familiarity with responder organizations, functions, procedures, and anticipated responder decisions and response activities?
- Are responders/players evaluated with respect to demonstrated proficiency of their respective responsibilities and functions, communication and coordination with other responders, familiarity and use of procedures and equipment, and overall professional response?
- Are facilities and equipment evaluated with respect to adequacy of functions and operability?
- Are procedures evaluated with respect to their use by responders, including adequacy of content?
- Did controllers conduct a post-exercise critique to gather and document observations and solicit feedback from players/responders?
- Was a formal critique process conducted by the controller/evaluator organization to determine whether individual exercise objectives were accomplished based on a synthesis of all the observations and information/data gathered during the conduct of the exercise?
- Are Evaluation Reports (After-Action Reports) for facility and site exercises completed in a timely manner and submitted to the Field Element Manager?

- Does an After-Action Report document the results of the exercise critique and evaluation?
- Are issues (e.g., deficiencies, findings and opportunities for improvement) identified in exercise evaluations?

Programmatic LOIs

- Does the site/facility have in place a formal exercise program to validate all elements of an emergency management program over a five-year period?
- Does this include a plan (e.g., a matrix) for validating all the elements of each program by incorporating specific objectives in exercises over the 5-year period?
- Is there a method documented to ensure that responder proficiency at the site and facility levels is adequately tested and evaluated?
- Have emergency program core capabilities (such as; categorization, protective actions and communications) been identified and included in the exercise program?
- Has the contractor implemented a comprehensive fire safety and emergency response program commensurate with the nature of work (appropriate facility and site-wide fire protection, fire alarms and egress features and access to a capable ERO) per 10 CFR 851?

Good Practice

- Are program and exercise evaluations (including appraisals and assessments) based on specific standards and criteria in DOE G 151.1-3, Programmatic Elements, issued by the Director, Office of Emergency Operations?
- Does the site use Exercise Builder© (or a similar tool) to assist in the planning, documentation, and evaluation of its exercises?
- Have the evaluation criteria in Exercise Builder been tailored to the site and facility specific requirements?
- Do the exercise evaluation guides implement include industry standard evaluation criteria; such as those in DOE G 151.1-3, Programmatic Elements?

REVIEW APPROACH

Record Review:

- Review the self-assessment schedule – planned and completed.
- Review completed self-assessment reports (over the past 2-3 years).
- Review DOE/NNSA Field Element and self-assessment reports.
- Review assessments conducted by DOE/NNSA Headquarters organizations.
- Review the contractor assurance system program description and implementing procedures.
- Review any specific emergency management self-assessment program plans or procedures.
- Review completed exercise self-assessment reports (over the past 2 years).
- Review the exercise program description/plan
- Review the exercise program implementing procedures.
- Review exercise program after-action reports (over the past 5 years).
- Review exercise evaluation guides.
- Review final after-action reports for any operational emergencies.
- Review the facility/site emergency plan(s).
- Review exercise packages (over the past 2 years).
- Review closure documentation for exercise findings from the past 3 years.
- Review controller/evaluator training records, general and exercise specific.

- Review controller/evaluator training packages, general and exercise specific.
- Review EPHA documentation on scenario used in the observed exercise.
- Review controller/evaluator assignments.
- Review the status of implementation of selected corrective actions developed in response to findings identified during the previous Independent Oversight inspection.
- Review open and closed corrective action packages.
- Review closure documentation for findings from internal and external evaluations.
- Review corrective action tracking mechanisms.
- Review issues management, corrective action and root cause analysis procedures.

Interviews:
- Interview personnel responsible for the contractor's self-assessment program.
- Interview personnel who have conducted self-assessments.
- Interview DOE/NNSA Field Element personnel, as appropriate.

- Interview personnel responsible for the exercise program.
- Interview site and/or facility emergency management personnel responsible for the exercise program.
- Interview the exercise director.
- Interview exercise planners and schedulers.
- Interview exercise controllers and evaluators.
- Interview personnel responsible for analyzing findings, developing corrective actions, and managing closeout of findings (including verification and validation)?

Observations:
- Contractor self-assessment.
- Exercises.
- After exercise hot washes.
- After exercise evaluation meetings.
- Controller/evaluator training.
- Limited-Scope Performance Tests.
- Dynamic Analysis Exercise.
- Performance related to Exercise objectives associated with closure of findings from internal and external evaluations.