

**Interim  
Radiological Emergency Preparedness (REP)  
Program Manual**

**PROPOSED JOINT FEMA/NRC EXERCISE TASK FORCE  
CHANGES INCORPORATED**



**August 2002**

**TASK 3: ESTABLISH EXERCISE EVALUATION AREA CRITERIA AND EXTENT-OF-PLAY**

Prior to the promulgation of the current REP Evaluation Areas Exercise Methodology, REP Exercises were evaluated using the *Radiological Emergency Preparedness Manual* (FEMA-REP-14) and the *Radiological Emergency Preparedness Exercise Evaluation Criteria* (FEMA-REP-15). The following table cross-references the Evaluation Areas to the NUREG-0654 criteria and to the Objectives and Points of Review in FEMA-REP-14 and -15. This should be used when analyzing prior exercise reports and results in preparation for an upcoming exercise.

**TABLE 5 Comparison of Proposed Evaluation Areas with NUREG-0654/FEMA-REP-1, Rev. 1 Planning Criteria and REP-14/15 Objectives and Criteria**

EVALUATION AREA / Sub-element / Criterion	NUREG -0654 Criteria	REP-14/15 Objective & Criterion
<b>1 – EMERGENCY OPERATIONS MANAGEMENT</b>		1, 2, 3, 4, 5, 8,14, 17, 30
<b>1.a – Mobilization</b>		
<b>1.a.1:</b> OROs use effective procedures to alert, notify, and mobilize emergency personnel and activate facilities in a timely manner.	A.4; <b>C.1</b> ; D.3,4; E.1,2; H.4	1.1, 1.2; 30
<b>1.b – Facilities<sup>h</sup></b>		
<b>1.b.1:</b> Facilities are sufficient to support the emergency response.	H.3	2.1
<b>1.c – Direction and Control</b>		
<b>1.c.1:</b> Key personnel with leadership roles for the ORO provide direction and control to that part of the overall response effort for which they are responsible.	A.1.d; A.2.a,b	3.1
<b>1.d – Communications Equipment</b>		
<b>1.d.1:</b> At least two communication systems are available, at least one operates properly, and communication links are established and maintained with appropriate locations. Communications capabilities are managed in support of emergency operations.	F.1,2	4.1
<b>1.e – Equipment and Supplies to Support Operations</b>		
<b>1.e.1:</b> Equipment, maps, displays, dosimetry, potassium iodide (KI), and other supplies are sufficient to support emergency operations.	H.7, 10; J.10.a,b,e; J.11; K.3.a	2.1; 5.1; 8.2; 14.2

<sup>h</sup> Facilities will only be specifically evaluated for this criterion if they are new or have substantial changes in structure or mission.

**TASK 3: ESTABLISH EXERCISE EVALUATION AREA CRITERIA AND EXTENT-OF-PLAY**

**TABLE 5 Comparison of Proposed Evaluation Areas with NUREG-0654/FEMA-REP-1, Rev. 1 Planning Criteria and REP-14/15 Objectives and Criteria (cont'd)**

<b>2 – PROTECTIVE ACTION DECISION MAKING</b>		5, 7, 9, 14, 15, 16, 26, 28
<b>2.a – Emergency Worker Exposure Control</b>		
<b>2.a.1:</b> OROs use a decision-making process, considering relevant factors and appropriate coordination, to ensure that an exposure control system, including the use of KI, is in place for emergency workers including provisions to authorize radiation exposure in excess of administrative limits or protective action guides.	J.10.e,f; K.4	5.1, 5.3; 14.1
<b>2.b – <del>Radiological</del> Assessment and Protective Action Recommendations and Decisions for the <del>Plume Phase of the</del> Emergency Phase</b>		
<b>2.b.1:</b> Appropriate protective action recommendations are based on available information on plant conditions, field monitoring data, and licensee and ORO dose projections, as well as knowledge of onsite and offsite environmental conditions.	I.8,10; Supp. 3	7.1
<b>2.b.2:</b> A decision-making process involving consideration of appropriate factors and necessary coordination is used to make protective action decisions (PADs) for the general public (including the recommendation for the use of KI, if ORO policy).	J.9; J.10.f,m	9.1; 14.1
<b>2.c – Protective Action Decisions Consideration for the Protection of Special Populations</b>		
<b>2.c.1:</b> Protective action decisions are made, as appropriate, for special population groups.	J.9; J.10.d,e	9.1; 15.1; 16.1
<b>2.d – Radiological Assessment and Decision-Making for the Ingestion Exposure Pathway</b>		
<b>2.d.1:</b> Radiological consequences for the ingestion pathway are assessed and appropriate protective action decisions are made based on the ORO planning criteria.	J.9,11	26.1, 26.2
<b>2.e – Radiological Assessment and Decision-Making Concerning Relocation, Reentry, and Return</b>		
<b>2.e.1:</b> Timely relocation, reentry, and return decisions are made and coordinated as appropriate, based on assessments of radiological conditions and criteria in the ORO’s plan and/or procedures.	I.10; J.9; M.1	28.1, 28.2, 28.3, 28.4, 28.5

**TASK 3: ESTABLISH EXERCISE EVALUATION AREA CRITERIA AND EXTENT-OF-PLAY**

**TABLE 5 Comparison of Proposed Evaluation Areas with NUREG-0654/FEMA-REP-1, Rev. 1 Planning Criteria and REP-14/15 Objectives and Criteria (cont'd)**

<b>3 – PROTECTIVE ACTION IMPLEMENTATION</b>		5, 11, 14, 15, 16, 17, 27, 29
<b>3.a – Implementation of Emergency Worker Exposure Control</b>		
<b>3.a.1:</b> The OROs issue appropriate dosimetry and procedures, and manage radiological exposure to emergency workers in accordance with the plan and procedures. Emergency workers periodically and at the end of each mission read their dosimeters and record the readings on the appropriate exposure record or chart.	K.3.a, 3.b	5.1, 5.2
<b>3.b – Implementation of KI Decision</b>		
<b>3.b.1:</b> KI and appropriate instructions are made available should a decision to recommend use of KI be made. Appropriate record keeping of the administration of KI for emergency workers and institutionalized individuals is maintained.	J.10.e	14.1, 14.3
<b>3.c – Implementation of Protective Actions for Special Populations</b>		
<b>3.c.1:</b> Protective action decisions are implemented for special populations other than schools within areas subject to protective actions.	J.10.c,d,g	15.1, 15.2
<b>3.c.2:</b> OROs/School officials implement protective actions for schools.	J.10.c,d,g	16.1, 16.2, 16.3
<b>3.d – Implementation of Traffic and Access Control</b>		
<b>3.d.1:</b> Appropriate traffic and access control is established. Accurate instructions are provided to traffic and access control personnel.	J.10.g,j	17.1, 17.2, 17.3
<b>3.d.2:</b> Impediments to evacuation <u>and/or response</u> are identified and resolved.	J.10.k	17.4
<b>3.e – Implementation of Ingestion Pathway Decisions</b>		
<b>3.e.1:</b> The ORO demonstrates the availability and appropriate use of adequate information regarding water, food supplies, milk and agricultural production within the ingestion exposure pathway emergency planning zone for implementation of protective actions.	J.9,11	27.1
<b>3.e.2:</b> Appropriate measures, strategies and pre-printed instructional material are developed for implementing protective action decisions for contaminated water, food products, milk, and agricultural production.	J.9,11	11.4; 27.2; 27.3
<b>3.f – Implementation of Relocation, Reentry, and Return Decisions</b>		
<b>3.f.1:</b> Decisions regarding controlled reentry of emergency workers and relocation and return of the public are coordinated with appropriate organizations and implemented.	M.1,3	29.1, 29.2, 29.3, 29.4

**TASK 3: ESTABLISH EXERCISE EVALUATION AREA CRITERIA AND EXTENT-OF-PLAY**

**TABLE 5 Comparison of Proposed Evaluation Areas with NUREG-0654/FEMA-REP-1, Rev. 1 Planning Criteria and REP-14/15 Objectives and Criteria (cont'd)**

<b>5 – EMERGENCY NOTIFICATION AND PUBLIC INFORMATION</b>		10, 11, 12, 13
<b>5.a – Activation of the Prompt Alert and Notification System</b>		
<b>5.a.1:</b> Activities associated with primary alerting and notification of the public are completed in a timely manner following the initial decision by authorized offsite emergency officials to notify the public of an emergency situation. The initial instructional message to the public must include as a minimum the elements required by current FEMA REP guidance.	10 CFR Part 50, Appendix E.IV.D; E.5,6,7	10.1
<b>5.a.2:</b> [RESERVED]		
<b>5.a.3:</b> Activities associated with FEMA approved exception areas (where applicable) are completed within 45 minutes following the initial decision by authorized offsite emergency officials to notify the public of an emergency situation. Backup alert and notification of the public is completed within 45 minutes following the detection by the ORO of a failure of the primary alert and notification system. <sup>i</sup>	Appendix 3: B.2.c; E.6	10.2, 10.3
<b>5.b – Emergency Information and Instructions for the Public and the Media</b>		
<b>5.b.1:</b> OROs provide accurate emergency information and instructions to the public and the news media in a timely manner.	E.5,7; G.3.a; G.4.c	11.1, 11.2, 11.3; 12.1, 12.2; 13.1, 13.2

[i. The failure \(or partial failure\) of the primary alert and notification system must be demonstrated once every six years in conjunction with the required hostile action-based scenario in cases where plans require the deployment of resources to perform backup route alerting, which may also be detailed to respond to a hostile action-based event at the site \(LLEA, etc\).](#)

## **TASK 4: DEVELOP AND REVIEW EXERCISE SCENARIO**

### **Description**

The scenario for a simulated nuclear power plant accident is developed jointly by the State and Licensee and submitted to NRC and FEMA Regional Offices for review. The FEMA RAC Chair reviews the scenario to confirm that the source term and scenario events are adequate to drive the agreed-upon exercise evaluation area criteria and extent of play.

### **Milestone**

State and Licensee scenario developers jointly submit the scenario to FEMA at least 60 days prior to the exercise. The RAC Chair completes review of the scenario at least 45 days before the exercise. Final scenario adjustments to ensure adequate demonstration of evaluation area criteria are made by the State and Licensee at least 15 days prior to the exercise.

### **References**

NUREG-0654.

### **Products**

Exercise scenario.

### **Guidance**

The exercise scenario should include plant conditions and offsite consequences sufficient to drive activities necessary for the demonstration of the agreed-upon exercise evaluation area criteria.

The State and Licensee should develop a scenario for submission to FEMA and the NRC that includes the following information:

- A chronology of all key events;
- A narrative description of exercise events and activities;
- Meteorological data and forecasts; and
- Radiological data, e.g., characteristics of release, projected dose, exposure rates, and concentrations in the environment.

#### **TASK 4: DEVELOP AND REVIEW EXERCISE SCENARIO**

The ~~radiological data should be supported by and compatible with~~ plant conditions and the associated potential for releases or simulated releases should support and be compatible with the radiological data. In the absence of a simulated release, the extent-of-play committee should develop controller inject data ~~should be developed~~ to drive activities that require simulated exposure rates or concentrations in the environment.

The following guidance is provided for the development of exercise scenarios for play related to evacuation, sheltering, administration of potassium iodide (KI), decontamination, control of contaminated food and water, relocation, reentry, and return. Doses and distances should be contextually determined in accordance with the following:

- Specific organizational plans,
- The geographical location of involved jurisdictions,
- The status of demonstrated evaluation area criteria within six-year periods,
- The identification of uncorrected Areas Requiring Corrective Action (ARCAs), and
- Other exercise-specific considerations

**Use of decision criteria.** Exercises are designed to enable OROs to demonstrate the capability to make decisions on appropriate actions to protect the public and emergency workers using procedures and decision criteria established in the plans. The evaluation area criteria to be demonstrated and the corresponding extent-of-play should be agreed upon and documented in a pre-exercise agreement by the State and FEMA prior to initiating the development of a scenario (Task 3).

Demonstration of decisions to implement evacuation and sheltering necessitates special consideration. **Initial** decisions to evacuate and shelter are typically based on plant conditions and associated recommendations by the Licensee. These decisions usually prescribe evacuation to a predetermined distance (e.g., a two-mile radius and five miles in downwind sectors almost always converted to pre-planned geographic areas) and sheltering (or staying indoors waiting for additional instructions) to a greater distance. **Subsequent** decisions to evacuate and shelter are typically based on a comparison of projected dose to the PAG, where the projected dose is calculated based on a simulated release or field measurement data (including meteorological data and forecasts) provided by controller injects. For these subsequent decisions, the projected dose should exceed the evacuation and sheltering PAGs to a distance greater than the initial recommendation, but not beyond the boundary of the plume pathway EPZ.

For each evaluation area criterion to be demonstrated in an exercise, the accident scenario should be sufficient to drive exercise play for the participating jurisdictions, in accordance with the extent-of-play agreements. The distance from the nuclear power plant that a particular decision criterion (e.g., PAG) should be exceeded is contextually determined by the location of the jurisdictions designated

#### **TASK 4: DEVELOP AND REVIEW EXERCISE SCENARIO**

to demonstrate the activity. For example, if controls on milk or food crops will be demonstrated, the PAGs should be exceeded in areas that involve production or processing of these products. Radiological data to support controller injects should be provided as part of the scenario.

It is not necessary to exceed all PAGs in order to demonstrate implementation of an action. For example, to demonstrate a decision to evacuate, either the thyroid or TEDE PAG may be exceeded.

The following guidance applies scenario criteria to specific aspects of REP exercise play.

1. **Plume pathway exercise play:** This guidance applies when there is no demonstration of ingestion pathway exercise play, relocation, reentry, or return (so called **plume-only** exercises). There are two basic approaches to satisfying the evaluation area criteria and extent-of-play agreements for plume-only exercises. The **preferred approach** entails an integrated exercise where the accident scenario includes a combination of plant conditions and a simulated release of radioactive materials into the environment. In such an approach, the source term corresponding to the simulated release and resultant dose projections should be of sufficient magnitude and distance to drive the demonstration of exercise evaluation area criteria and extent-of-play for the participating jurisdictions in accordance with the pre-exercise agreements. While this approach postulates a simulated release into the environment, **initial** protective action decision making and implementation should be based on plant conditions alone. **Subsequent** decisions to evacuate and shelter are typically based on a comparison of projected dose to the PAG, where the projected dose is calculated based on a simulated release or field measurement data (including meteorological data and forecasts) provided by controller injects. For these subsequent decisions, the projected dose should exceed the evacuation and sheltering PAGs to a distance greater than the initial recommendation, but not beyond the boundary of the plume pathway EPZ. However, radiological release conditions should be varied between biennial exercise scenarios within the 6-year cycle (refer to plume pathway scenario options “d & e” below).

For exercise play related to the use or nonuse of **KI** for emergency workers, scenarios should contain sufficient radioiodine release to force participating jurisdictions to make decisions whether or not to use KI. It is not necessary for scenarios to exceed the PAG for KI to adequately test decision making for its use or nonuse by emergency workers. For jurisdictions that have opted to include the use of KI as a supplement to evacuation and/or sheltering for the general public, scenarios must include sufficient radioiodine to exceed the PAG once in the six year cycle for each offsite jurisdiction. With respect to the distribution of KI for emergency workers, it is generally not necessary to exceed the PAG for KI since distribution of KI is effected during the early stages of an emergency to permit its use prior to exposure by the emergency workers.

**Plume pathway scenario option:** An alternative approach to satisfying evaluation area criteria and extent-of-play agreements for plume-only exercises is to base decisions on plant conditions with potential for release but with no simulated release of radiological materials



#### **TASK 4: DEVELOP AND REVIEW EXERCISE SCENARIO**

from the plant. In such a scenario, plant conditions alone may be used to drive exercise play for all initial protective action decision making and implementation.

Subsequent protective action decision making and implementation would be based on a combination of plant conditions and controller injects. Controller injects would be used to drive components of field exercise play requiring contamination or exposure rates. Examples of such components are as follows:

- Dose projection,
- Decisions to decontaminate people and equipment,
- Emergency worker use and understanding of established **turn back** values, and
- Field monitoring.

Under this alternative approach, OROs affected by the plume (as determined by the exercise scenario and in accordance with extent-of-play agreements) should implement appropriate and timely protective actions in accordance with the PAG strategies set forth in the plans.

Certain conditions should be met for FEMA to approve such an approach. (1) The involved OROs cannot have a FEMA-cited Deficiency related to protective action decision making in the last exercise. (2) Scenarios should be designed to sustain potential projected doses for a sufficient period of time to drive OROs to implement protective actions, as applicable (refer to additional options “d & e” below). Such scenario designs would preclude OROs from waiting out the scenario in order to avoid making decisions on the implementation of protective actions. Failure of responsible OROs to take appropriate and timely protective actions may result in FEMA citing a Deficiency, even in the absence of a simulated release during the exercise. (3) The scenario should contain simulated contamination or exposure rates in the form of controller injects to drive field exercise play components requiring them or allow for the evaluation during an out of sequence drill. (4) If the OROs have opted to use KI for the general public, Criterion 3.b.1 cannot have been selected for demonstration.

The plume pathway exercise play option set forth above should not be used for exercises in which ingestion and/or relocation, reentry, and return pathway exercise play is carried out because of the need to have simulated deposition of radioactive materials for these activities. Additional scenario options include:

- a. States may demonstrate their post-plume phase capabilities more frequently than the required once every six years.*

Offsite response organizations may conduct post-plume phase exercise activities (i.e., ingestion, relocation, recovery and return activities) more than the required once every six years. Post-plume phase activities may be performed in connection with a

#### **TASK 4: DEVELOP AND REVIEW EXERCISE SCENARIO**

plume exercise, or they may be separated. If separated, the plume phase technical data may be extended into post-plume activities. However, the bases for performing the post-plume phase activities may be derived from other technical data discrete from what was used in the previous plume exercise. Regardless of where the activity is generated or derived (e.g., the previous plume exercise or a new scenario), a pre-exercise briefing is necessary to ensure that all response organizations (Federal, State, Tribal, and local) are uniformly cognizant of these data and assumptions. When the post-plume phase is an extension of the previous plume phase exercise, the briefing should include the protective action decisions made during that exercise. If a new scenario is used, the briefing should include discussion of the data, information, and controller injects necessary for the development of protective action decisions as a point of departure for the post-plume phase exercise.

Demonstration criteria for this option would be the same for any post-plume phase exercise.

- b. Mini-scenarios may be developed to support the increased participation of local responders.*

Mini-scenarios, sometimes referred to as “controller injects,” can provide increased participation by State (at times), Tribal, and local response organizations during lulls in the primary radiological response activities. For example, a HAZMAT mini-scenario incident would require an immediate response.

Mini-scenarios may be useful in enhancing exercise play for offsite emergency response organizations. However, they should be designed to not detract from the primary goals, technical analysis, and time line of the primary scenario.

- c. Exercises may begin at any of the four Emergency Classification Levels (ECLs) and/or an ECL may be skipped to reflect a fast-breaking event.*

At least one biennial exercise per cycle should involve at a minimum an initial classification at a Site Area Emergency or rapid escalation from an Alert to a Site Area Emergency.

Organizations may design events triggering an offsite response to initiate exercise play at any ECL and/or provide for the skipping of an ECL(s). In many exercises, the scenario generally postulates a sequential escalation from an Unusual Event or Alert classification through a Site Area Emergency to a General Emergency classification, with appropriate time periods designated between classifications to allow for the systematic demonstration of response activities. This scenario does not reflect actual event classifications where licensees have initially classified at the Alert level or higher. Skipping ECLs can make for less predictability and as a result more realistic and challenging scenarios.

#### TASK 4: DEVELOP AND REVIEW EXERCISE SCENARIO

~~Events triggering an offsite response may be designed to initiate exercise play at any ECL and/or provide for the skipping of an ECL(s). Skipping ECLs can make for more interesting and less predictable scenarios.~~ To drive the offsite response, an event generally must reach the General Emergency classification. If the event does not result in a simulated release of radioactivity, the extent-of-play committee must provide controller injects ~~must be provided~~ to allow evaluation of field monitoring/dose projection and protective action decision-making/implementation activities.

~~It is recommended that FEMA recommends that organizations vary~~ scenarios for exercises and drills ~~be varied~~ to enhance training and provide for a more realistic response. Scenarios for drills should be independent of the scenario used for the exercise. In addition, the advantages gained by not declaring the four ECLs in sequential order can be lost if the “dress rehearsal” drill that is held at many sites employs the same use of ECLs out of their usual order. The scenario for the “dress rehearsal” should not be the same scenario that is used during the evaluated exercise.

d. Radiological release options should be varied.

(1) No release. One biennial exercise per cycle will not be required to simulate a radiological release to the environment. However, the scenario must postulate conditions that would warrant a protective action decision. This will require the escalation to a General Emergency classification (based on plant conditions) to drive a protective action decision, based on the licensee and state/local emergency plans, and reflect the potential for an imminent release if appropriate mitigative actions are not taken. The scope of demonstration will include the capability to mobilize and control field teams and perform and coordinate dose assessments.

To allow for the evaluation of dose assessment and field monitoring activities for a postulated radiological release, either controller injects may be provided or biennial exercise will be supplemented by formal evaluation of the annual radiological monitoring drill and health physics drill by FEMA-REP Program.

Due to the impact on state and local resources, prior agreement of the use of the “no release” option must be reached between the licensee and respective offsite response organizations as part of the overall scenario development process.

(2) At least one biennial exercise per cycle will simulate dose levels to exceed EPA-400 Protective Action Guides (PAGs) beyond the site boundary, with the potential for dose levels to exceed EPA- 400 PAGs beyond two miles if prompt mitigative actions are not implemented.

(3) At least one biennial exercise per cycle will simulate dose levels to exceed

#### TASK 4: DEVELOP AND REVIEW EXERCISE SCENARIO

EPA-400 PAGs beyond five miles, with the ability to determine and implement protective actions out to 10 miles based on release. This release option is required for all ingestion pathway exercise scenarios.

*e. Radiological release conditions should vary.*

Release and meteorological conditions will vary between exercise scenarios within a cycle (i.e., puffs vs. continuous release, ground vs. elevated release, shifting wind direction and speed) to reflect plant design and historical site characteristics for a specific season. Controller injects may be needed to drive consideration of field monitoring and consideration of protective actions in other than prevailing downwind areas.

*f. The spectrum of scenarios will be varied to create more realistic and challenging exercises.*

1) One biennial exercise per cycle must be driven by a hostile action-based scenario that focuses on unique response challenges posed to licensee and offsite response organizations (OROs).

- Scenarios will differ from cycle to cycle to reflect various attack scenarios considered applicable to the site (i.e., ground, waterborne, airborne, or a combination).
- Scenarios may include simultaneous attacks or threats to other facilities at the regional or local level that would impact ORO resource availability in responding to an event at the nuclear power plant (NPP) site.
- Scenarios may include equipment/component failures (i.e., failure of an emergency diesel generator or ECCS pump to start, failure of containment to isolate) to facilitate escalation in event classification or radiological release potential.
- Scenarios must not provide for a “no release option” for consecutive hostile action-based exercises.

2) Natural phenomenon/all-hazard events should be considered as possible scenario initiating events, based on applicability to site:

- Natural events historically applicable to the regional area (hurricane, tornado, earthquake, flooding, etc.).
- Site-specific all-hazards events (accident involving near-site facility, train derailment on or adjacent to site owner controlled area, etc.) These events should not be limited to the impact on NPP structures/ components but also consider the impact on ORO resources and command & control. However, event(s) should not be of sufficient magnitude to focus attention away from evaluating the response to the overall NPP emergency.

#### TASK 4: DEVELOP AND REVIEW EXERCISE SCENARIO

3) Impact of seasonal conditions – Guidance currently states that “exercises should be conducted under various seasons and weather conditions.” However, implementation has been impractical. As such, the focus should be on seasonal factors impacting the protective action recommendation/pad process, schools in/out of session, etc.

d.g. *The plume and post-plume phases of the exercise may be separated by days or months.*

Organizations may separate Pplume and post-plume activities ~~may be separated~~. Separating post-plume from plume activities would provide OROs with additional time for performing these activities more comprehensively.

e.h. *State, Tribal, and local governments may provide a representative who is involved in exercise planning on a confidential basis and is not a member of the response team. This confidential representative or a trusted agent could provide input to enhance development of the scenario and extent of play, and, therefore, enhance exercise play.*

A confidential representative/trusted agent is a member of an ORO who may participate substantially in the exercise design but must agree not to divulge exercise confidences to potential players or others involved with the exercise. A confidential representative/trusted agent cannot be a member of the response team unless the ORO has a shortage of personnel that could play in the exercise. If a confidential representative/trusted agent is used in the exercise, he/she should not be in roles that would be compromised by the knowledge of confidential information and must agree to not use confidential exercise information until it is released. For example, a primary decision maker would not work as a confidential representative/trusted agent, but a traffic/access controller, reception center monitor, dispatcher, or dose assessment team member could be a confidential representative/trusted agent.

2. **Post-plume exercise play:** For post-plume exercise play, exercise scenarios should incorporate simulated offsite deposition exceeding the PAGs for food and/or water, as expressed in the plan. The deposition should exceed the PAGs in areas where typical food or water produced in the area would be found, but not outside the ingestion pathway EPZ. The deposition should contain both short-lived (e.g., iodine and other typical fission products) and long-lived radionuclides (e.g., cesium). The areas to be affected by the radioactive plume and consequent ground deposition should be contextually determined, based on the participating jurisdictions and specific organizational evaluation area criteria to be demonstrated.

For relocation, reentry, and return exercise play, the scenario should incorporate simulated offsite deposition that exceeds the relocation PAGs set forth in the plan in the jurisdictions specified in the extent-of-play agreement. For relocation activities, the projected dose is

**TASK 4: DEVELOP AND REVIEW EXERCISE SCENARIO**

calculated for the first year, any subsequent year, and fifty years. The source term should contain both short-lived and long-lived radionuclides such as cesium to prevent waiting out decay to avoid relocation decisions. A cesium-134 plus cesium-137 to iodine-131 ratio in the range of 0.2 to 0.6 is recommended. However, sufficient additional relatively short-lived radionuclides should be included so that the first year relocation dose is the controlling dose.

It is recommended that ingestion, relocation, reentry, and return exercise play be integrated within the same exercise, because of the similar scenario requirements of exercise play.

FEMA Regional staff should use this guidance in reviewing and approving scenarios. FEMA and NRC Regional staff should coordinate the scenario review and notify the involved State(s) and Licensee of any necessary modifications. If scenarios do not meet these criteria, meetings should be conducted with all involved parties to identify and agree upon scenario modifications. If agreement cannot be reached, assistance should be requested from FEMA and NRC Headquarters.

## EVALUATION AREA 1

### Emergency Operations Management

#### *Sub-Element 1.a—Mobilization*

##### Intent

This sub-element is derived from NUREG-0654, which provides that Offsite Response Organizations (OROs) should have the capability to alert, notify, and mobilize emergency personnel and to activate and staff emergency facilities.

**Criterion 1.a.1: OROs use effective procedures to alert, notify, and mobilize emergency personnel and activate facilities in a timely manner. (NUREG-0654, A.4; C.1; D.3, 4; E.1, 2; H.4)**

##### Extent of Play

Responsible OROs should demonstrate the capability to receive notification of an emergency situation from the licensee, verify the notification, and contact, alert, and mobilize key emergency personnel in a timely manner. As appropriate, the ability of local responders to promptly notify the respective emergency management organizations of the event should be demonstrated when the information is passed immediately from station security. Responsible OROs should demonstrate the activation of facilities for immediate use by mobilized personnel when they arrive to begin emergency operations. Activation of facilities, including the incident command structure, should be completed in accordance with the plan and/or procedures.

The incident command structure and staging areas should be positioned far enough from the nuclear power plant site to preclude placing first responders at risk due to any on-going threat. In addition, other factors, such as meteorological conditions, should be considered when initially positioning or repositioning the incident command structure and/or staging areas to minimize first responder exposure if the potential for an offsite radiological release at the nuclear power plant exists.

Pre-positioning of emergency personnel is appropriate, in accordance with the extent-of-play agreement, at those facilities located beyond a normal commuting distance from the individual's duty location or residence. Further, pre-positioning of staff for out-of-sequence demonstrations is appropriate in accordance with the extent-of-play agreement. Pre-positioning must be negotiated during the extent-of-play meetings, including appropriate contingencies prior to arrival of exercise players. Consider delaying the arrival of players by ten minutes for every hour of travel time.

Initial law enforcement, fire service, and emergency medical service response to the nuclear power plant site may impact the ability to staff REP functions. The ability to identify and request additional resources or identify compensatory measures should be

demonstrated. Exercises should also address the role of mutual aid and the Emergency Management Assistance Center (EMAC) to the incident. An integral part of the response to a hostile action-based scenario at a nuclear power plant may also be within the auspices of the Federal government (i.e., FBI, NRC, DHS). Protocols for requesting Federal, State and local law enforcement support should be demonstrated, as appropriate.

All activities must be based on the ORO's plans and procedures and completed as they would be in an actual emergency, unless noted above or otherwise indicated in the extent-of-play agreement.

***Sub-Element 1.b—Facilities***

Intent

This sub-element is derived from NUREG-0654, which provides that Offsite Response Organizations (OROs) have facilities to support the emergency response.

**Criterion 1.b.1: Facilities are sufficient to support the emergency response. (NUREG-0654, H.3)**

Extent of Play

Facilities will only be specifically evaluated for this criterion if they are new or have substantial changes in structure or mission. Responsible OROs should demonstrate the availability of facilities that support the accomplishment of emergency operations. Some of the areas to be considered are: adequate space, furnishings, lighting, restrooms, ventilation, backup power and/or alternate facility (if required to support operations).

Facilities must be set up based on the ORO's plans and procedures and demonstrated as they would be used in an actual emergency, unless noted above or otherwise indicated in the extent-of-play agreement.

***Sub-Element 1.c—Direction and Control***

Intent

This sub-element is derived from NUREG-0654, which provides that Offsite Response Organizations (OROs) have the capability to control their overall response to an emergency.

**Criterion 1.c.1: Key personnel with leadership roles for the ORO provide direction and control to that part of the overall response effort for which they are responsible. (NUREG-0654, A.1.d; A.2.a, b)**

Extent of Play



### Section III.B — Evaluation Areas

Leadership personnel should demonstrate the ability to carry out essential functions of the response effort, for example: keeping the staff informed through periodic briefings and/or other means, coordinating with other appropriate OROs, and ensuring completion of requirements and requests.

As appropriate, essential functions of the response effort needed to effectively demonstrate the incident command structure will be evaluated. The effective coordination of incident command activities with the nuclear power plant and state/local EOCs in support of event assessment and mitigative efforts would be the primary focus of this extent-of-play. Responding agency/ jurisdiction representatives should be integrated into the incident command structure as needed. Personnel accountability is established and maintained at the incident command structure, and appropriate security measures are implemented and maintained according to the threat. Incident command structure (NIMS) principles shall apply.

All activities associated with direction and control must be performed based on the ORO's plans and procedures and completed as they would be in an actual emergency, unless otherwise noted above or indicated in the extent-of-play agreement.

#### ***Sub-Element 1.d—Communications Equipment***

##### Intent

This sub-element is derived from NUREG-0654, which provides that Offsite Response Organizations (ORO) should establish reliable primary and backup communication systems to ensure communications with key emergency personnel at locations such as the following: appropriate contiguous governments within the emergency planning zone (EPZ), Federal emergency response organizations, the licensee and its facilities, emergency operations centers (EOC), forward command centers/posts (including incident command structures), and field teams.

**Criterion 1.d.1: At least two communication systems are available, at least one operates properly, and communication links are established and maintained with appropriate locations. Communications capabilities are managed in support of emergency operations. (NUREG-0654, F.1, 2)**

##### Extent of Play

ORO will demonstrate that a primary and at least one backup system are fully functional at the beginning of an exercise. If a communications system or systems are not functional, but exercise performance is not affected, no exercise issue will be assessed. Communications equipment and procedures for facilities and field units should be used as needed for the transmission and receipt of exercise messages. All facilities and field teams should have the capability to access at least one communication system that is independent of the commercial telephone system. Responsible OROs should demonstrate the capability to manage the communication systems and ensure that all message traffic is

handled without delays that might disrupt the conduct of emergency operations. OROs should ensure that a coordinated communication link for fixed and mobile medical support facilities exists. The specific communications capabilities of OROs should be commensurate with that specified in the response plan and/or procedures. Exercise scenarios could require the failure of a communications system and the use of an alternate system, as negotiated in the extent-of-play agreement.

As appropriate, capabilities to provide for effective primary and backup communications between the incident command structure and the nuclear power plant, first responders dispatched from staging areas or responding to the nuclear power plant site, and with EOCs should be demonstrated.

All activities associated with the management of communications capabilities must be demonstrated based on the ORO's plans and procedures and completed as they would be in an actual emergency, unless otherwise noted above or in the extent-of-play agreement.

### ***Sub-Element 1.e—Equipment and Supplies to Support Operations***

#### Intent

This sub-element is derived from NUREG-0654, which provides that Offsite Response Organizations (ORO) have emergency equipment and supplies adequate to support the emergency response.

**Criterion 1.e.1: Equipment, maps, displays, dosimetry, potassium iodide (KI), and other supplies are sufficient to support emergency operations. (NUREG-0654, H.7,10; J.10.a, b, e, J.11; K.3.a)**

#### Extent of Play

Equipment within the facility (facilities) should be sufficient and consistent with the role assigned to that facility in the ORO's plans and/or procedures in support of emergency operations. Use of maps and displays is encouraged.

All instruments, should be inspected, inventoried, and operationally checked before each use. Instruments should be calibrated in accordance with the manufacturer's recommendations. Unmodified CDV-700 series instruments and other instruments without a manufacturer's recommendation should be calibrated annually. Modified CDV-700 instruments should be calibrated in accordance with the recommendation of the modification manufacturer. A label indicating such calibration should be on each instrument or calibrated frequency can be verified by other means. Additionally, instruments being used to measure activity should have a range of readings sticker affixed to the side of the instrument. The above considerations should be included in 4.a.1 for field team equipment; 4.c.1 for radiological laboratory equipment (does not apply to analytical equipment); reception center and emergency worker facilities' equipment under 6.a.1; and ambulance and medical facilities' equipment under 6.d.1.

Dosimetry: Sufficient quantities of appropriate direct-reading and permanent record dosimetry and dosimeter chargers should be available for issuance to all ~~categories of emergency workers that could be~~ assigned to (if the facility is within the plume EPZ) or deployed from that facility. Appropriate direct-reading dosimetry should allow individual(s) to read the administrative reporting limits and maximum exposure limits contained in the ORO's plans and procedures.

Dosimetry should be inspected for electrical leakage at least annually and replaced, if necessary. CDV-138s, due to their documented history of electrical leakage problems, should be inspected for electrical leakage at least quarterly and replaced if necessary. This leakage testing will be verified during the exercise, through documentation submitted in the Annual Letter of Certification, and/or through a staff assistance visit.

Responsible OROs should demonstrate the capability to maintain inventories of KI sufficient for use by emergency workers, ~~as indicated on rosters~~; institutionalized individuals, as indicated in capacity lists for facilities; and, where stipulated by the plan and/or procedures, members of the general public (including transients) within the plume pathway EPZ.

As appropriate, provisions to make dosimetry and KI available to specialized response teams (i.e., civil support team, swat, urban search and rescue, bomb squads, or other ancillary groups not currently identified within the plans and procedure(s)) should be demonstrated. In addition, equipment compatibility associated with law enforcement, fire service, and emergency medical services response from the incident command structure or staging areas should be demonstrated.

Quantities of dosimetry and KI available and storage location(s) will be confirmed by physical inspection at storage location(s) or through documentation of current inventory submitted during the exercise, provided in the Annual Letter of Certification submission, and/or verified during a Staff Assistance Visit. Available supplies of KI should be within the expiration date indicated on KI bottles or blister packs. As an alternative, the ORO may produce a letter from a certified private or State laboratory indicating that the KI supply remains potent, in accordance with U.S. Pharmacopoeia standards.

At locations where traffic and access control personnel are deployed, appropriate equipment (e.g., vehicles, barriers, traffic cones and signs, etc.) should be available or their availability described.

All activities must be based on the ORO's plans and procedures and completed as they would be in an actual emergency, unless noted above or otherwise indicated in the extent-of-play agreement.

## EVALUATION AREA 2

### Protective Action Decision Making

#### *Sub-Element 2.a—Emergency Worker Exposure Control*

##### Intent

This sub-element is derived from NUREG-0654, which provides that Offsite Response Organizations (OROs) have the capability to assess and control the radiation exposure received by emergency workers and have a decision chain in place, as specified in the ORO's plans and procedures, to authorize emergency worker exposure limits to be exceeded for specific missions.

Radiation exposure limits for emergency workers are the recommended accumulated dose limits or exposure rates that emergency workers may be permitted to incur during an emergency. These limits include any pre-established administrative reporting limits (that take into consideration Total Effective Dose Equivalent or organ-specific limits) identified in the ORO's plans and procedures.

**Criterion 2.a.1: OROs use a decision-making process, considering relevant factors and appropriate coordination, to ensure that an exposure control system, including the use of KI, is in place for emergency workers including provisions to authorize radiation exposure in excess of administrative limits or protective action guides. (NUREG-0654, K.4, J.10. e, f)**

##### Extent of Play

OROs authorized to send emergency workers into the plume exposure pathway EPZ should demonstrate a capability to meet the criterion based on their emergency plans and procedures.

Responsible OROs should demonstrate the capability to make decisions concerning the authorization of exposure levels in excess of preauthorized levels and to the number of emergency workers receiving radiation dose above pre-authorized levels. This would include emergency workers dispatched on-site to support plan accident assessment and mitigative actions.

As appropriate, OROs should demonstrate the capability to make decisions on the distribution and administration of KI as a protective measure, based on the ORO's plan and/or procedures or projected thyroid dose compared with the established Protective Action Guides (PAGs) for KI administration.

All activities must be based on the ORO's plans and procedures and completed as they would be in an actual emergency, unless noted above or otherwise indicated in the extent-of-play agreement.

***Sub-Element 2.b.—Radiological-Dose Assessment and Protective Action Recommendations and Decisions for the Plume-Phase-of-the-Emergency Phase***

Intent

This sub-element is derived from NUREG-0654, which provides that Offsite Response Organizations (OROs) have the capability to use all available data to independently project integrated dose from exposure rates or other information and compare the estimated dose savings with the protective action guides. OROs have the capability to choose, among a range of protective actions, those most appropriate in a given emergency situation. OROs base these choices on PAGs from the ORO's plans and/or procedures or the Environmental Protection Agency (EPA) guidance manual, *Manual of Protective Action Guides and Protective Actions for Nuclear Accidents*, EPA 400-R-92-001 (May 1992), and other criteria, such as, plant conditions, licensee protective action recommendations, coordination of protective action decisions with other political jurisdictions (e.g., other affected OROs), availability of appropriate in-place shelter, weather conditions, and situations (to include hostile action-based events, the effects of the specific hostile action, and the affiliated response) that create higher than normal risk from evacuation.

**Criterion 2.b.1: Appropriate protective action recommendations are based on available information on plant conditions, field monitoring data, and licensee and ORO dose projections, as well as knowledge of onsite and offsite environmental conditions. (NUREG-0654, I.8, 10 and Supplement 3)**

Extent of Play

During the initial stage of the emergency response, following notification of plant conditions that may warrant offsite protective actions, the ORO should demonstrate the capability to use appropriate means, described in the plan and/or procedures, to develop protective action recommendations (PAR) for decision-makers based on available information and recommendations from the licensee and field monitoring data, if available.

When release and meteorological data are provided by the licensee, the ORO also considers these data. The ORO should demonstrate a reliable capability to independently validate dose projections. The types of calculations to be demonstrated depend on the data available and the need for assessments to support the PARs appropriate to the scenario. In all cases, calculation of projected dose should be demonstrated. Projected doses should be related to quantities and units of the PAG to which they will be compared. PARs should be promptly transmitted to decision-makers in a prearranged format.

Differences greater than a factor of 10 between projected doses by the licensee and the ORO should be discussed with the licensee with respect to the input data and assumptions

used, the use of different models, or other possible reasons. Resolution of these differences should be incorporated into the PAR if timely and appropriate. The ORO should demonstrate the capability to use any additional data to refine projected doses and exposure rates and revise the associated PARs.

All activities must be based on the ORO's plans and procedures and completed as they would be in an actual emergency, unless noted above or otherwise indicated in the extent-of-play agreement.

**Criterion 2.b.2: A decision-making process involving consideration of appropriate factors and necessary coordination is used to make protective action decisions (PAD) for the general public (including the recommendation for the use of KI, if ORO policy). (NUREG-0654, J.9, 10.f, m)**

#### Extent of Play

Offsite Response Organizations (OROs) should have the capability to make both initial and subsequent PADs. They should demonstrate the capability to make initial PADs in a timely manner appropriate to the situation, based on notification from the licensee, assessment of plant status and releases, available information related to the event, input from appropriate State and local authorities (i.e., the incident command structure), and PARs from the utility and ORO staff. In addition, a hostile action-based event or other incident may pose an undue risk to an evacuation and an alternate protective action decision may be required.

Resources designated to support an immediate evacuation of the public may need to be augmented due to ORO law enforcement, fire service and emergency medical services response to the nuclear power plant site or other key infrastructure.

The dose assessment personnel may provide additional PARs based on the subsequent dose projections, field monitoring data, or information on plant conditions. In addition, incident command structure may provide input regarding considerations for subsequent PARs based on the response and/or site conditions. The decision makers should demonstrate the capability to change protective actions as appropriate based on these projections factors.

If the ORO has determined that KI will be used as a protective measure for the general public under offsite plans, then the ORO should demonstrate the capability to make decisions on the distribution and administration of KI as a protective measure for the general public to supplement sheltering and evacuation. This decision should be based on the ORO's plan and/or procedures or projected thyroid dose compared with the established PAG for KI administration. The KI decisionmaking process should involve close coordination with appropriate assessment and decision-making staff.

If more than one ORO is involved in decision-making, OROs should communicate and coordinate PADs with affected OROs. In addition, decisions should be coordinated with

the incident command structure. OROs should demonstrate the capability to communicate the contents of decisions to the affected jurisdictions.

All decision-making activities by ORO personnel must be performed based on the ORO's plans and procedures and completed as they would be in an actual emergency, unless noted above or otherwise indicated in the extent-of-play agreement.

***Sub-Element 2.c—Protective Action Decisions Consideration for the Protection of Special Populations***

Intent

This sub-element is derived from NUREG-0654, which provides that Offsite Response Organizations (OROs) should have the capability to determine protective action recommendations, including evacuation, sheltering and use of potassium iodide (KI), if applicable, for special population groups (e.g., hospitals, nursing homes, correctional facilities, schools, licensed day care centers, mobility impaired individuals, and transportation dependent individuals). Focus is on those special population groups that are (or potentially will be) affected by a radiological release from a nuclear power plant.

**Criterion 2.c.1: Protective action decisions are made, as appropriate, for special population groups. (NUREG-0654, J.9, J.10.d, e)**

Extent of Play

Usually, it is appropriate to implement evacuation in areas where doses are projected to exceed the lower end of the range of PAGs, except for situations where there is a high-risk environmental condition or where high-risk groups (e.g., the immobile or infirm) are involved. In these cases, examples of factors that should be considered are: weather conditions, shelter availability, availability of transportation assets, risk of evacuation vs. risk from the avoided dose, and precautionary school evacuations. In addition, decisions should be coordinated with the incident command structure. In situations where an institutionalized population cannot be evacuated, the administration of KI should be considered by the OROs.

Applicable OROs should demonstrate the capability to alert and notify all public school systems/districts of emergency conditions that are expected to or may necessitate protective actions for students. Contacts with public school systems/districts must be actual.

In accordance with plans and/or procedures, OROs and/or officials of public school systems/districts should demonstrate the capability to make prompt decisions on protective actions for students. Officials should demonstrate that the decision making process for protective actions considers (that is, either accepts automatically or gives heavy weight to) protective action recommendations made by ORO personnel, the ECL at which these recommendations are received, preplanned strategies for protective actions

### *Section III.B — Evaluation Areas*

for that ECL, and the location of students at the time (for example, whether the students are still at home, en route to the school, or at the school).

All decision-making activities associated with protective actions, including consideration of available resources, for special population groups must be based on the ORO's plans and procedures and completed as they would be in an actual emergency, unless noted above or otherwise indicated in the extent-of-play agreement.

#### ***Sub-Element 2.d.—Radiological Assessment and Decision-Making for the Ingestion Exposure Pathway***

##### Intent

This sub-element is derived from NUREG-0654, which provides that Offsite Response Organizations (OROs) have the means to assess the radiological consequences for the ingestion exposure pathway, relate them to the appropriate PAGs, and make timely, appropriate protective action decisions to mitigate exposure from the ingestion pathway.

During an accident at a nuclear power plant, a release of radioactive material may contaminate water supplies and agricultural products in the surrounding areas. Any such contamination would likely occur during the plume phase of the accident and, depending on the nature of the release, could impact the ingestion pathway for weeks or years.

**Criterion 2.d.1: Radiological consequences for the ingestion pathway are assessed and appropriate protective action decisions are made based on the ORO's planning criteria. (NUREG-0654, J.9, J.11)**

##### Extent of Play

It is expected that the Offsite Response Organizations (OROs) will take precautionary actions to protect food and water supplies, or to minimize exposure to potentially contaminated water and food, in accordance with their respective plans and procedures. Often such precautionary actions are initiated by the OROs based on criteria related to the facility's Emergency Classification Levels (ECL). Such actions may include recommendations to place milk animals on stored feed and to use protected water supplies.

The ORO should use its procedures (for example, development of a sampling plan) to assess the radiological consequences of a release on the food and water supplies. The ORO's assessment should include the evaluation of the radiological analyses of representative samples of water, food, and other ingestible substances of local interest from potentially impacted areas, the characterization of the releases from the facility, and the extent of areas potentially impacted by the release. During this assessment, OROs should consider the use of agricultural and watershed data within the 50-mile EPZ. The radiological impacts on the food and water should then be compared to the appropriate ingestion PAGs contained in the ORO's plan and/or procedures. (The plan and/or



## EVALUATION AREA 3

### Protective Action Implementation

#### *Sub-Element 3.a—Implementation of Emergency Worker Exposure Control*

##### Intent

This sub-element is derived from NUREG-0654, which provides that OROs should have the capability to provide for the following: distribution, use, collection, and processing of direct-reading dosimetry and permanent record dosimetry; the reading of direct-reading dosimetry by emergency workers at appropriate frequencies; maintaining a radiation dose record for each emergency worker; and establishing a decision chain or authorization procedure for emergency workers to incur radiation exposures in excess of protective action guides, always applying the ALARA (As Low As is Reasonably Achievable) principle as appropriate.

**Criterion 3.a.1: The OROs issue appropriate dosimetry and procedures, and manage radiological exposure to emergency workers in accordance with the plans and procedures. Emergency workers periodically and at the end of each mission read their dosimeters and record the readings on the appropriate exposure record or chart. (NUREG-0654, K.3.a, b)**

##### Extent of Play

ORO's should demonstrate the capability to provide appropriate direct-reading and permanent record dosimetry, dosimeter chargers, and instructions on the use of dosimetry to emergency workers. For evaluation purposes, appropriate direct-reading dosimetry is defined as dosimetry that allows individual(s) to read the administrative reporting limits (that are pre-established at a level low enough to consider subsequent calculation of Total Effective Dose Equivalent) and maximum exposure limits (for those emergency workers involved in life saving activities) contained in the ORO's plans and procedures.

Each emergency worker should have the basic knowledge of radiation exposure limits as specified in the ORO's plan and/or procedures. Procedures to monitor and record dosimeter readings and to manage radiological exposure control should be demonstrated.

During a plume phase exercise, emergency workers should demonstrate the procedures to be followed when administrative exposure limits and turnback values are reached. The emergency worker should report accumulated exposures during the exercise as indicated in the plans and procedures. OROs should demonstrate the actions described in the plan and/or procedures by determining whether to replace the worker, to authorize the worker to incur additional exposures or to take other actions. If scenario events do not require emergency workers to seek authorizations for additional exposure, evaluators should interview at least two emergency workers, to determine their knowledge of whom to contact in the event authorization is needed and at what exposure levels. Emergency

### *Section III.B — Evaluation Areas*

workers may use any available resources (e.g., written procedures and/or coworkers) in providing responses.

Although it is desirable for all emergency workers to each have a direct-reading dosimeter, there may be situations where team members will be in close proximity to each other during the entire mission and adequate control of exposure can be effected for all members of the team by one dosimeter worn by the team leader. Emergency workers who are assigned to low exposure rate areas, e.g., at reception centers, counting laboratories, emergency operations centers, and communications centers, may have individual direct-reading dosimeters or they may be monitored by dosimeters strategically placed in the work area. It should be noted that, even in these situations, each team member must still have their own permanent record dosimetry. Individuals without specific radiological response missions, such as farmers for animal care, essential utility service personnel, or other members of the public who must re-enter an evacuated area following or during the plume passage, should be limited to the lowest radiological exposure commensurate with completing their missions.

ORO's may have administrative limits considerably lower than EPA-400-R-92-001 dose limits for emergency workers performing various services (i.e., life saving, protection of valuable property, all activities). ORO's should ensure that their process used to seek authorization for exceeding dose limits does not negatively impact the capability to respond to an event where life saving and/or protection of valuable property may require an urgent response.

All activities must be based on the ORO's plans and procedures and completed as they would be in an actual emergency, unless noted above or otherwise indicated in the extent-of-play agreement.

#### ***Sub-Element 3.b—Implementation of KI Decision***

##### **Intent**

This sub-element is derived from NUREG-0654, which provides that Offsite Response Organizations (OROs) should have the capability to provide radioprotective drugs for emergency workers, institutionalized individuals, and, if in the plan and/or procedures, to the general public for whom immediate evacuation may not be feasible, very difficult, or significantly delayed. While it is necessary for OROs to have the capability to provide KI to emergency workers and institutionalized individuals, the provision of KI to the general public is an ORO option and is reflected in ORO's plans and procedures. Provisions should include the availability of adequate quantities, storage, and means of the distribution of radioprotective drugs.

### Section III.B — Evaluation Areas

All activities must be based on the ORO's plans and procedures and completed, as they would be in an actual emergency, unless noted above or otherwise indicated in the extent-of-play agreement.

#### ***Sub-Element 3.d.—Implementation of Traffic and Access Control***

##### Intent

This sub-element is derived from NUREG-0654, which provides that Offsite Response Organizations (OROs) have the capability to implement protective action plans, including relocation and restriction of access to evacuated/sheltered areas. This sub-element focuses on selecting, establishing, and staffing of traffic and access control points and removal of impediments to the flow of evacuation traffic.

**Criterion 3.d.1: Appropriate traffic and access control is established. Accurate instructions are provided to traffic and access control personnel. (NUREG-0654, J.10.g, j)**

##### Extent of Play

OROs should demonstrate the capability to select, establish, and staff appropriate traffic and access control points, which may include controlling access to areas affected by the events, consistent with protective action decisions (for example, evacuating, sheltering, and relocation), in a timely manner. OROs should demonstrate the capability to provide instructions to traffic and access control staff on actions to take when modifications in protective action strategies necessitate changes in evacuation patterns or in the area(s) where access is controlled.

Traffic and access control staff should demonstrate accurate knowledge of their roles and responsibilities, including verifying emergency worker credentials as per the extent-of-play agreement. This capability may be demonstrated by actual deployment or by interview, in accordance with the extent-of-play agreement.

In instances where OROs lack authority necessary to control access by certain types of traffic (rail, water, and air traffic), they should demonstrate the capability to contact the State or Federal agencies with authority to control access.

All activities must be based on the ORO's plans and procedures and completed as they would be in an actual emergency, unless noted above or otherwise indicated in the extent-of-play agreement.

**Criterion 3.d.2: Impediments to evacuation and/or response are identified and resolved. (NUREG-0654, J.10.k)**

##### Extent of Play

OROs should demonstrate the capability, as required by the scenario, to identify and take appropriate actions concerning impediments to evacuation and/or response. Actual dispatch of resources to deal with impediments, such as wreckers, need not be demonstrated; however, all contacts, actual or simulated, should be logged.

All activities must be based on the ORO's plans and procedures and completed as they would be in an actual emergency, unless noted above or otherwise indicated in the extent-of-play agreement.

***Sub-Element 3.e—Implementation of Ingestion Pathway Decisions***

Intent

This sub-element is derived from NUREG-0654, which provides that OROs should have the capability to implement protective actions, based on criteria recommended by current Food and Drug Administration guidance, for the ingestion pathway zone (IPZ), the area within an approximate 50-mile radius of the nuclear power plant. This sub-element focuses on those actions required for implementation of protective actions.

**Criterion 3.e.1: The ORO demonstrates the availability and appropriate use of adequate information regarding water, food supplies, milk, and agricultural production within the ingestion exposure pathway emergency planning zone for implementation of protective actions. NUREG-0654, J.9, 11)**

Extent of Play

Applicable OROs should demonstrate the capability to secure and utilize current information on the locations of dairy farms, meat and poultry producers, fisheries, fruit growers, vegetable growers, grain producers, food processing plants, and water supply intake points to implement protective actions within the ingestion pathway EPZ. OROs should use Federal resources as identified in the FRERP, and other resources (e.g., compacts, nuclear insurers, etc.), if available. Evaluation of this criterion will take into consideration the level of Federal and other resources participating in the exercise.

All activities must be based on the ORO's plans and procedures and completed as they would be in an actual emergency, unless noted above or otherwise indicated in the extent-of-play agreement.

**Criterion 3.e.2: Appropriate measures, strategies, and pre-printed instructional material are developed for implementing protective action decisions for contaminated water, food products, milk, and agricultural production. (NUREG-0654, J.9, 11)**

Extent of Play

## EVALUATION AREA 4

### Field Measurement and Analysis

#### *Sub-Element 4.a—Plume Phase Field Measurements and Analyses*

##### Intent

This sub-element is derived from NUREG-0654, which provides that Offsite Response Organizations (OROs) should have the capability to deploy field teams with the equipment, methods, and expertise necessary to determine the location of airborne radiation and particulate deposition on the ground from an airborne plume. In addition, NUREG-0654 indicates that OROs should have the capability to use field teams within the plume emergency planning zone to detect airborne radioiodine in the presence of noble gases and to detect radioactive particulate material in the airborne plume. In the event of an accident at a nuclear power plant, the possible release of radioactive material may pose a risk to the nearby population and environment. Although accident assessment methods are available to project the extent and magnitude of a release, these methods are subject to large uncertainties. During an accident, it is important to collect field radiological data in order to help characterize any radiological release. Adequate equipment and procedures are essential to such field measurement efforts.

**Criterion 4.a.1: The field teams are equipped to perform field measurements of direct radiation exposure (cloud and ground shine) and to sample airborne radioiodine and particulates. (NUREG-0654, H.10; I.7, 8, 9)**

##### Extent of Play

Responsible OROs should demonstrate the capability to brief teams on predicted plume location and direction, travel speed, and exposure control procedures before deployment. During a hostile action-based event, the deployment of field teams should be coordinated with the incident command structure. In addition, field teams may be staged during the initial phase of a hostile action-based event until conditions surrounding the nuclear power plant site are understood.

Field teams should be equipped with all instrumentation and supplies necessary to accomplish their mission. This should include instruments capable of measuring gamma exposure rates and detecting the presence of beta radiation. These instruments should be capable of measuring a range of activity and exposure, including radiological protection/exposure control of team members and detection of activity on the air sample collection media, consistent with the intended use of the instrument and the ORO's plans and procedures. An appropriate radioactive check source should be used to verify proper operational response for each low range radiation measurement instrument (less than 1 R/hr) and for high range instruments when available. If a source is not available for a high range instrument, a procedure should exist to operationally test the instrument before entering an area where only a high range instrument can make useful readings.

For exercise purposes, timely is defined as “the responsible ORO personnel/representatives demonstrate actions to disseminate the appropriate information/instructions with a sense of urgency and without undue delay.” If message dissemination is to be identified as not having been accomplished in a timely manner, the evaluator(s) will document a specific delay or cause as to why a message was not considered timely.

Procedures to broadcast the message should be fully demonstrated as they would in an actual emergency up to the point of transmission. Broadcast of the message(s) or test messages *is not* required. The alert signal activation may be simulated. However, the procedures should be demonstrated up to the point of actual activation.

The capability of the primary notification system to broadcast an instructional message on a 24-hour basis should be verified during an interview with appropriate personnel from the primary notification system.

All activities for this criterion must be based on the ORO’s plans and procedures and completed as they would be in an actual emergency, except as noted above or otherwise indicated in the extent-of-play agreement.

**Criterion 5.a.2: [Reserved]**

**Criterion 5.a.3: Activities associated with FEMA approved exception areas (where applicable) are completed within 45 minutes following the initial decision by authorized offsite emergency officials to notify the public of an emergency situation. Backup alert and notification of the public is completed within 45 minutes following the detection by the ORO of a failure of the primary alert and notification system. (NUREG-0654, E. 6, Appendix 3.B.2.c)**

Extent of Play

Offsite Response Organizations (OROs) with FEMA-approved exception areas (identified in the approved Alert and Notification System Design Report) 5–10 miles from the nuclear power plant should demonstrate the capability to accomplish primary alerting and notification of the exception area(s) within 45 minutes following the initial decision by authorized offsite emergency officials to notify the public of an emergency situation. The 45-minute clock will begin when the OROs make the decision to activate the alert and notification system for the first time for a specific emergency situation. The initial message should, at a minimum, include: a statement that an emergency exists at the plant and where to obtain additional information.

For exception area alerting, at least one route needs to be demonstrated and evaluated. The selected route(s) should vary from exercise to exercise. However, the most difficult route should be demonstrated at least once every six years. All alert and notification activities along the route should be simulated (that is, the message that would actually be used is read for the evaluator, but not actually broadcast) as agreed upon in the extent-of-

play. Actual testing of the mobile public address system will be conducted at some agreed-upon location.

Backup alert and notification of the public should be completed within 45 minutes following the detection by the ORO of a failure of the primary alert and notification system. Backup route alerting ~~only needs to~~ will be demonstrated and evaluated, in accordance with the ORO's plan and/or procedures and the extent-of-play agreement, if the exercise scenario calls for failure of any portion of the primary system(s), or if any portion of the primary system(s) actually fails to function. Backup route alerting should also be demonstrated in conjunction with hostile action-based event scenarios where resource restrictions in responding to the event at the nuclear power plant site may impact the ability to perform backup route alerting. If demonstrated, only one route needs to be selected and demonstrated. All alert and notification activities along the route should be simulated (that is, the message that would actually be used is read for the evaluator, but not actually broadcast) as agreed upon in the extent-of-play. Actual testing of the mobile public address system will be conducted at some agreed-upon location.

All activities for this criterion must be based on the ORO's plans and procedures and completed as they would be in an actual emergency, except as noted above or otherwise indicated in the extent-of-play agreement.

***Sub-Element 5.b—Emergency Information and Instructions for the Public and the Media***

Intent

This sub-element is derived from NUREG-0654, which provides that Offsite Response Organizations (OROs) should have the capability to disseminate to the public appropriate emergency information and instructions, including any recommended protective actions. In addition, NUREG-0654 provides that OROs should ensure that the capability exists for providing information to the media. This includes the availability of a physical location for use by the media during an emergency. NUREG-0654 also provides that a system should be available for dealing with rumors. This system will hereafter be known as the public inquiry hotline.

**Criterion 5.b.1: OROs provide accurate emergency information and instructions to the public and the news media in a timely manner. (NUREG-0654, E. 5, 7; G.3.a, G.4.c)**

Extent of Play

Subsequent emergency information and instructions should be provided to the public and the media in a timely manner (will not be subject to specific time requirements). For exercise purposes, timely is defined as “the responsible ORO personnel/representatives demonstrate actions to disseminate the appropriate information/instructions with a sense of urgency and without undue delay.” If message dissemination is to be identified as not

having been accomplished in a timely manner, the evaluator(s) will document a specific delay or cause as to why a message was not considered timely.

The ORO should ensure that emergency information and instructions are consistent with protective action decisions made by appropriate officials. The emergency information should contain all necessary and applicable instructions ( for example, evacuation instructions, evacuation routes, reception center locations, what to take when evacuating, information concerning pets, shelter-in-place instructions, information concerning protective actions for schools and special populations, public inquiry telephone number, etc.) to assist the public in carrying out protective action decisions provided to them. The ORO should also be prepared to disclose and explain the Emergency Classification Level (ECL) of the incident. At a minimum, this information must be included in media briefings and/or media releases. OROs should demonstrate the capability to use language that is clear and understandable to the public within both the plume and ingestion pathway EPZs. This includes demonstration of the capability to use familiar landmarks and boundaries to describe protective action areas.

The emergency information should be all-inclusive by including previously identified protective action areas that are still valid, as well as new areas. The OROs should demonstrate the capability to ensure that emergency information that is no longer valid is rescinded and not repeated by broadcast media. In addition, the OROs should demonstrate the capability to ensure that current emergency information is repeated at pre-established intervals in accordance with the plan and/or procedures. OROs should demonstrate the capability to develop emergency information in a non-English language when required by the plan and/or procedures.

If ingestion pathway measures are exercised, OROs should demonstrate that a system exists for rapid dissemination of ingestion pathway information to pre-determined individuals and businesses in accordance with the ORO's plan and/or procedures.

OROs should demonstrate the capability to provide timely, accurate, concise, and coordinated information to the news media for subsequent dissemination to the public. This would include demonstration of the capability to conduct timely and pertinent media briefings and distribute media releases as the situation warrants. The OROs should demonstrate the capability to respond appropriately to inquiries from the news media. All information presented in media briefings and media releases should be consistent with protective action decisions and other emergency information provided to the public. Copies of pertinent emergency information (for example, Emergency Alert System [EAS] messages and media releases) and media information kits should be available for dissemination to the media.

OROs should demonstrate that an effective system is in place for dealing with calls to the public inquiry hotline. Hotline staff should demonstrate the capability to provide or obtain accurate information for callers or refer them to an appropriate information source. Information from the hotline staff, including information that corrects false or inaccurate



*Section III.B — Evaluation Areas*

information when trends are noted, should be included, as appropriate, in emergency information provided to the public, media briefings, and/or media releases.

The dissemination of information dealing with specific aspects of nuclear power plant security capabilities, actual or perceived adversarial (terrorist) force or threat, and tactical law enforcement response may be withheld. Pre-approved generic press statements may be utilized in order to initially address media inquiries, while not identifying specifics regarding the response and/or aspects of the crime scene investigation, as agreed upon by the extent-of-play agreement.

All activities for this criterion must be based on the ORO's plans and procedures and completed as they would be in an actual emergency, unless noted above or otherwise indicated in the extent-of-play agreement.