

## EXERCISE SCENARIO WORKING GROUP RECOMMENDATIONS

**PURPOSE:** This paper provides recommendations for enhancing the challenging aspects of emergency preparedness (EP) scenarios at nuclear power plants (NPPs). These recommendations were the consensus of an Exercise Scenario Working Group, which met at the Federal Emergency Management' (FEMA) Boston Field Office on January 31 and February 1, 2007.

**BACKGROUND:** The Exercise Scenario Working Group (WG) was formed at the request of the Nuclear Regulatory Commission (NRC) and consists of the following NRC and Department of Homeland Security (DHS)/FEMA representation:

- Joe Anderson (NRC Headquarters)
- Dan Wilcox (DHS/FEMA-REP Headquarters)
- Norm Valentine (DHS/FEMA-REP Kansas City Field Office)
- Bob Swartz (DHS/FEMA-REP Boston Field Office)
- Scott Flowerday (DHS/FEMA-REP Denton Field Office)

The WG was tasked with developing recommendations for joint DHS/FEMA-NRC implementation in response to a Commission directive to engage DHS on the development of a wide spectrum of EP exercise scenarios which would help avoid anticipatory responses associated with preconditioning of participants. The Commission specifically tasked NRC staff to work with DHS on scenario guidance that incorporated various release conditions (ranging from little or no release to a large release) and events including, but not limited to, security-based events. Additionally, the WG was asked to use proposed industry guidelines, as outlined in Revision 0 to NEI 06-04, "Guideline for the Development of EP Drill and Exercise Threat-Based Scenarios – August 2006," as one of its resources in their recommendation development process.

**PROCESS:** The WG focused on identifying changes that would provide for more challenging and realistic exercise scenarios to address anticipatory responses associated with preconditioning of participants. A key element is the varying of scenario criteria between exercises so that scenarios are not predictable. Finally, the WG considered the scope of demonstration required, via a biennial exercise or periodic drill, to ensure that key functional areas were sufficiently evaluated to support a determination of continued reasonable assurance.

The recommendations identified below were divided into both short-term changes (to be implemented in Calendar Year 2010) and long-term changes (to be implemented as part of a joint NRC and DHS/FEMA comprehensive revision of EP regulations and guidance). The recommended short-term changes would not require the deletion of any existing exercise evaluation criteria, but rather the incorporation of elements to address a broader spectrum of conditions to provide for more challenging and realistic exercise scenarios. As identified in the WG charter, these recommendations are being presented to NRC and DHS/FEMA-REP management for consideration before formally initiating a change to existing regulations or guidance.

## RECOMMENDATIONS:

**Short-term** – The WG believes that the following changes to exercise scenarios represent the most meaningful ways of incorporating challenging yet more realistic aspects, thus minimizing anticipatory responses associated with preconditioning of participants.

1. **Non-sequential escalation in event classification:** Current exercise scenarios postulate a sequential escalation from an Unusual Event or Alert classification through a Site Area Emergency to a General Emergency, with appropriate time periods designated between classifications to allow for the systematic demonstration of response activities. This concept does not reflect actual event classifications, which have been initially classified by the licensee as an Alert or Site Area Emergency. The WG recommends at least one scenario conducted over an exercise cycle include one of the following options:

- Initial classification at a Site Area Emergency, or
- Rapid escalation from an Alert to a Site Area Emergency.

NOTE: EEM Section III.H.3 (Scenario Options) currently provides for this option. However, similar criteria does not exist in NRC provided or endorsed guidance for licensees.

2. **Radiological release options:**

- a. No release – One biennial exercise per cycle is not 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 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 would 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 (per EEM Section III.H.3, Scenario Options) or the biennial exercise could be supplemented by formal evaluation of the annual radiological monitoring drill by DHS/FEMA-REP.***

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 coordination process.

- b. Dose levels exceed EPA-400 protective action guides beyond 5 miles – One biennial exercise per cycle will simulate the ability to determine and implement protective actions out to 10 miles based on release.
- c. Dose levels exceed EPA-400 protective action guides beyond site boundary – One biennial exercise per cycle (with the potential for dose levels to exceed EPA-400 protective actions guidelines (PAGs) beyond 2 miles if prompt mitigative actions are not implemented).

3. **Varying release conditions:** Release and meteorological conditions should vary between exercise scenarios within a cycle (i.e., puff 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.

4. **Spectrum of event scenarios:**

a. Security (threat) events – One biennial exercise per cycle shall be driven by a security (threat)-based scenario that focuses on unique response challenges posed to licensee and offsite response organizations (OROs).

- Scenarios should vary from cycle to cycle to reflect various attack scenarios considered applicable to site (i.e., ground, waterborne, airborne, or a combination).
- Scenarios should 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 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.
- Security event (threat) scenarios shall not provide for a “no release option” (described in Recommendation 2.a above) for consecutive exercise cycles, (i.e., in back-to-back exercises).

b. Natural Phenomenon / All-Hazard Events – The following 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.), and
- Site-specific all-hazards events (accident involving near-site industrial 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.

NOTE: EEM Section II.H.2 (Scenario Options) currently allows the development of mini-scenarios to support increased participation of local responders.

c. Impact of seasonal conditions – Guidance currently states that “Exercises should be conducted under various seasons and weather conditions.” However, implementation has been impractical. Evaluation areas (objectives) should be revised to focus on seasonal factors impacting the protective action recommendation/PAD process, schools in/out of session, etc.

**Long-term** – These recommendations are intended to clarify and/or incorporate various response aspects not currently being addressed under existing guidance. Due to the scope of these recommendations and potential impact on existing regulations and guidance, the WG recommends that they be considered for implementation as part of a broader revision to EP regulations and guidance (e.g., NUREG-0654/FEMA-REP-1) currently being reviewed by the NRC and DHS as part of a formal rulemaking process.

1. **“Fast-Breaker”** – Initial classification as, or rapid escalation to, a General Emergency.

The WG recommends revising the guidance for **Communications Drills** contained in Section II.N.2.a of NUREG-0654/FEMA-REP-1 to encompass the periodic demonstration of key functional elements associated with a “fast-breaker” event:

- Notification by the licensee of ORO 24 hour notification point(s),
- Rapid notification of State and local officials (decision-makers),
- Timely protective action decision and drafting of alert notification system (ANS) message, and
- Direction given by decision-maker(s) to initiate ANS.

This drill should be evaluated by DHS/FEMA and the NRC (as part of existing drill evaluations in accordance with Inspection Procedure Attachment 71114.06).

2. **Staff Augmentation** – Section II.N.1.b to NUREG-0654/FEMA-REP-1 states that each organization should make provisions to start an exercise during “off-hours” and that some exercises should be unannounced. In 67 FR 20583, dated April 25, 2002, FEMA indicated that it sought comments on whether to begin exercises on weekends, holidays, or off-hours. The conclusion in the Federal Register (FR) notice states that “...FEMA believes that the new exercise evaluation criteria should provide for off-hours and unannounced exercises, but will defer consideration of a standard until it has finalized a policy granting exercise credit for participation in actual emergency response activities and equivalent drills and exercises.” EEM Section III.G (Exercise Credit) currently proposes a process for obtaining credit for actual event response or participation in activities other than a REP exercise; however, this criterion has not been formally adopted.

The WG recommends the creation of a separate Staff Augmentation Drill that would test the licensee, State and local organization’s capability to timely staff key positions during “off-hours” at least once per exercise cycle, with specific guidance related to applicable positions and “timeliness” defined. As indicated in 67 FR 20583, the WG also recommends formal implementation of guidance for obtaining credit for actual event response or participation in activities other than a REP exercise.

The demonstration of staff augmentation capability via a periodic callout drill versus during a biennial exercise, where an organization would demonstrate the ability to contact required staffing and verify their timely response, would provide relief to the concerns raised by various States and local commenters.

3. **Ingestion Pathway capabilities** – Appendix E to 10 CFR part 50, Section F.2.d (Training), only requires that a State participate in the ingestion pathway portion of exercises at least once every six years and that participation should be rotated between sites if more than one site is located within a State. In various States, authority for ingestion pathway decisions/actions (relocation, reentry and return decisions and implementation) has been delegated to local government organizations.

The WG recommends that regulations and guidance be clarified to ensure demonstration by local government organizations of ingestion pathway capabilities once every six years when delegated by the state.

4. **Alternate/backup facilities** – While various local emergency plans identify an alternate location for their emergency operations center (EOC) when it is located within 10 miles of a NPP site, no regulations or guidance require the designation of an alternate facility. The WG recommends that regulations and guidance be revised to require the designation of an alternate EOC when a primary facility is located within 10 miles of a NPP site. In addition, the WG recommends the establishment of a periodic drill (self-evaluated by the ORO) to test the ability to effectively staff, activate and perform key functions from the alternate facility.

IMPACT OF SHORT-TERM RECOMMENDATIONS ON EP REGULATIONS/GUIDANCE:

Note: Implementation of long-term recommendations will be performed as part of a broader revision to EP regulations and guidance currently being reviewed by the NRC and DHS/FEMA as part of a formal rulemaking process.

1. **Regulations**

<u>NRC</u>	DHS (FEMA)
Appendix E to 10 CFR Part 50 – Revise to reflect June 29, 2006 Commission SRM and <i>explicitly</i> require that a security event-based scenario be included as a biennial EP exercise. <sup>1</sup> To be performed as part of currently planned staff rulemaking (SECY-06-0200).	44 CFR 350.5 – Potential revision to remove reference to NUREG-0654/FEMA-REP-1. (Refer to Continuing Action #1 listed below.) <sup>2</sup>

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<sup>1</sup> NRC Office of General Counsel (OGC) opinion, dated January 3, 2005, entitled “NRC Authority to Compel Nuclear Power Reactor Licensees to Include a Security/Sabotage Scenario as Part of Their Biennial Emergency Preparedness Exercises,” states that “...an Order may be necessary – absent a rule change – to require a particular licensee to include a security/sabotage component in its emergency preparedness exercise if that licensee does not voluntarily include such a component and the NRC finds that such a component is necessary.”

<sup>2</sup> Section II.N.1.a of NUREG-0654/FEMA-REP-1 (Rev. 1) states that an exercise “...shall simulate an emergency that results in offsite radiological releases which would require response by offsite authorities.”

## 2. Guidance

### NRC

a) Engage NEI on the industry initiative to develop licensee guidance for drills/exercises, to include security (threat) event-based scenarios. The document would be submitted to the NRC and endorsed, based on satisfactory resolution of staff and public comments.

b) Inspection Procedure 71114.01 – Revise to incorporate changes consistent with REP Program Manual revision.

### DHS (FEMA)

REP Program Manual – Revise and formally implement to incorporate changes to evaluation area criteria to implement short-term recommendations.<sup>3</sup>

### CONTINUING ACTIONS:

1. [DHS/FEMA – Wilcox] Verify with REP legal counsel whether Recommendation 2.a meets previous NUREG-0654/FEMA-REP-1 interpretations that an exercise needs to simulate an emergency that results in an offsite radiological release which would require response by offsite authorities.
2. [NRC] Engage NEI, through appropriate public forums, on developing industry drill/exercise guidelines.
3. [NRC – Anderson / DHS/FEMA – Wilcox] Obtain NRC and DHS/FEMA management concurrence on proposed recommendations and submit to NRC and DHS/FEMA-REP Regions for comment.
4. [NRC – Anderson / DHS/FEMA – Wilcox] Develop milestones and a proposed time line for implementation of short-term recommendations.

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<sup>3</sup> DHS/FEMA will not endorse proposed industry NEI 06-04 document, but rather will incorporate required changes into the exercise evaluation area criteria to reflect a security event-based scenario per the recommendations of the WG.