

### EXERCISE EVALUATION – SCENARIO REVIEW

Effective Date: 10/01/2016

PROGRAM APPLICABILITY: 2515 A

#### 71114.08-01 INSPECTION OBJECTIVE

Review licensee submitted biennial exercise scenarios to ensure the exercise demonstration provides opportunities to demonstrate the licensee's capability to adequately perform key skills in principal functional areas to protect public health and safety in the unlikely event of a radiological emergency.

#### 71114.08-02 INSPECTION REQUIREMENTS

Note: Licensees may structure exercise scenario packages differently and this should be found acceptable, provided that the exercise, as conducted, will meet requirements of 10 CFR Part 50, Appendix E, § IV.F.2, and the facility emergency plan.

02.01 Verify the submitted scenario package includes: exercise objectives that support demonstration of key skills in principle functional areas, a timeline of exercise events, a description of imbedded drills, a description of key injects and messages, the expected emergency response organization (ERO) and offsite response organization (ORO) participation, and plant and player safety considerations.

02.02 Verify the scenario has required minimum exercise elements and identification of performance opportunities.

02.03 Evaluate the ability of the scenario to provide opportunities for the ERO to demonstrate proficiency in key skills necessary to implement the principle functional areas of emergency response, including those skills specific to emergency response duties in the control room, technical support center (TSC), operational support center (OSC), emergency operations facility (EOF), and joint information center (JIC)/joint information system (JIS).

02.04 Submit and review scenario comments with Federal Emergency Management Agency (FEMA) representative to ensure that scenario comments are consistent. Provide any exercise comments, questions or concerns to the licensee no later than 30 days prior to the scheduled exercise date.

Note: The following items are coordinated with Exhibit 1 as a tool for the inspector to perform their review.

03.01 Verify scenario submittal is complete.

- a. Completeness may be indicated by including exercise objectives that support demonstration of key skills in principle functional areas, a timeline of exercise events, a description of imbedded drills, a description of key injects and messages, the expected ERO and ORO participation, and plant and player safety considerations.

Note: Scenarios are submitted per 10 CFR § 50.4. The document is entered into the Agencywide Documents Access and Management System (ADAMS) by the Document Control Desk as not publicly available. Confidentiality of the scenario shall be maintained and a Sensitive Unclassified Non-Safeguards Information (SUNSI) review (for purposes of making the document public) shall not be performed until after completion of the exercise. The SUNSI review is performed by a Subject Matter Expert (e.g., a member of the U.S. Nuclear Regulatory Commission (NRC) Emergency Preparedness (EP) staff or the Project Manager for the specific site). Licensees may include a cover page with wording similar to the following: “This document’s availability should be controlled as non-public to ensure confidentiality from exercise responders until the conduct of the exercise is concluded.” After completion of the exercise and following a SUNSI review, the cover page may be removed or redacted, the file version updated in ADAMS and the document may be made publicly available, as determined by the SUNSI review. If a Freedom of Information Act request is submitted prior to the exercise date, notify NRC HQ and refer to ML12158A329 for disposition of the public release of the scenario.

03.02 Review the scenario submittal for the following:

- a. The minimum expected exercise elements are included in the scenario.

	<u>Element Description</u>	<u>Reference in guidance documents</u>
1	Accident detection and assessment	NUREG-0654: I.1, I.2
2	Emergency classification	NUREG-0654: D.1, D.2
3	Notification of onsite and offsite emergency responders	NUREG-0654: E.1, E.2, E.3, J.1
4	Communications	NUREG-0654: F.1, F.2, E.2, E.4, H.6 NUREG-0737, Supp 1: 8.1, 8.2, 8.3, 8.4
5	Radiological exposure control	NUREG-0654: K.1, K.2, K.3, K.5, K.6, J.3, J.6
6	Protective action recommendations	NUREG-0654: J.7
7	Staff augmentation	NUREG-0654: A.1, A.3, A.4, B.7, B.8, B.9
8	Shift staffing	NUREG-0654: B.1, B.2, B.3, B.5, Table 2

- b. The scenario is sufficiently varied from those used in the last two years of biennial exercises, off-year exercise(s), integrated response facility drills etc.
- c. ERO pre-conditioning is avoided to minimize anticipatory responses.

- d. To the extent possible, scenario and exercise play requires the ERO “earn” event information.
- e. Clearly identified Drill/Exercise Performance Indicator (DEP PI) opportunities.

Note: Technical evaluations of the scenario data and exercise control are the responsibility of the licensee. Review and verification of technical details such as, engineering operational parameters, engineering logic, source term, radiological instrumentation data, plant parameter units and data/injects provided by controllers is the responsibility of the licensee. Problems with the licensee’s review and verification may be revealed during the exercise or its critique and will be handled by IP71114.01 or IP71114.07, respectively. The inspector should only evaluate the scenario for its relative credibility and timing of events.

03.03 Evaluate scenario opportunities for the ERO to demonstrate key skills by ensuring:

- a. Opportunities for the ERO to perform their key skills as applicable to their emergency response duties in the TSC, OSC, EOF, and JIC/JIS are provided.
- b. Scenario data and progression of events are credible, logical, and challenging. The demands of the onsite and offsite exercise objectives will likely preclude complete fidelity between the scenario and the actual ERO response. The inspector will need to use judgment, based on experience, in performing this review. Examples of items to consider include:
  - 1. Exercise play should be consistent with all simulated events or conditions.
  - 2. If the core is simulated as being melted, the corresponding in-plant radiation levels should increase comparably.
  - 3. If a loss of AC power source is simulated, equipment and instrumentation that relies on that source should not be considered operable.
  - 4. A release should not be simulated as being stopped until the cause of the release has been corrected or mitigated.
  - 5. Simulated releases should not begin before the failures that cause the release to occur.
  - 6. Simulated field monitoring data should be consistent with simulated wind directions and plume transit times (e.g., the dose rate increases after the plume reaches that point).
  - 7. The timing of scenario events should be comparable with the time it would take the ERO to perform particular tasks under actual emergency conditions (e.g., time spent obtaining a radiation work permit, getting a work briefing, donning personal protective equipment, obtaining tools and parts, etc.).
- c. In addition to the above, hostile action based (HAB) scenarios should be reviewed for the following considerations:

Note: 10 CFR Part 50 does not specify a frequency for the conduct of the hostile action exercise during the eight year exercise cycle. It is the expectation of the NRC that licensees not plan a hostile action exercise at the beginning of an exercise cycle and wait to the end of the next exercise cycle to conduct their next hostile action exercise.

1. Two consecutive HAB exercises should not be “no or minimal radiological release” scenarios.
  2. Mitigative measures should commence after the simulated active attack has ceased but before local law enforcement agencies (LLEA) have swept the site for safe entry or declared the site secure. Securing the site may take days, and it is important that licensees train personnel to respond in the aftermath of hostile action events. Licensees shall demonstrate planning for and prioritization of mitigative action teams and protection of team personnel in efforts to prevent or ameliorate core damage or containment failure.
  3. The planning necessary to conduct a HAB exercise will challenge expectations for scenario confidentiality. For example, a drill or practice exercise involving a hostile action scenario may be conducted prior to the biennial exercise. In addition, prior reviews and approvals by various site personnel and OROs may be needed to involve offsite responders and other resources normally associated with hostile action response. Although some ERO members may infer that a hostile action scenario will be used in the biennial exercise, participants should not have knowledge of scenario details (e.g., specific events, timelines, or related information). Scenarios used for hostile action exercises must be sufficiently different from those used in drills/exercises during the previous 2 years. Specifically, the elements and consequences of the hostile action must be varied (e.g., attack type or direction, number of attackers, attack timeline, damage, casualties and offsite consequences). Provided that the above requirements are met, it is acceptable for the same ERO members to participate in hostile action drills or practice exercises and the subsequent biennial exercise.
  4. Verify scenario exercise objectives include HAB elements. Refer to NEI 06-04, “Conducting a Hostile Action-based Emergency Response Drill” Rev. 2, Appendix A, “Drill and Exercise Objectives” for acceptable exercise objectives.
- d. Review the scenario against the licensee’s records/schedule for scenario elements performed and required to be demonstrated during the exercise cycle.

	Element Description	Reference in guidance documents
1	Hostile Action Based	ISG: N.1.b.i.
2	An initial classification of, or rapid escalation to, a Site Area Emergency or General Emergency	ISG: N.1.b.ii
3	No radiological release or an unplanned minimal radiological release that requires the site to declare a Site Area Emergency, but does not require declaration of a General Emergency	ISG: N.1.b.iii

4	Off-hours staffing (6 p.m. to 4 a.m.)	ISG: N.1.c
5	Activation of emergency news center (Joint Information Center)	NUREG-0654: G.3, G.4
6	Use of fire control teams	NUREG-0654: N.2.b, O.4.d
7	Use of first aid and/or rescue teams	NUREG-0654: K.1, K.2, K.3, K.4, K.5, L.2, O.4.f
8	Use of medical support personnel	NUREG-0654: N.2.c, L.1, L.4, O.4.h
9	Use of licensee's headquarters support personnel	NUREG-0654: O.4.i
10	Use of security personnel to provide prompt access for emergency equipment and support	NUREG-0654: O.4.d
11	Use of backup communications	NUREG-0654: F.1
12	Rumor control	NUREG-0654: G.4.c
13	Use of emergency power (where a part of plant safety systems, e.g. TSC)	NUREG-0737, Supp. 1: 8.2.1
14	Evacuation of Emergency Response Facilities (ERFs) and relocation to backup ERFs, where applicable	NUREG-0654: J.10.g
15	Ingestion pathway exercise, when necessary to support state exercise requirements	NUREG-0654: J.9, J.11
16	Field monitoring, including soil, vegetation, and water sampling	NUREG-0654: I.7, I.8, I.11, N.2.d
17	Capability for determining the magnitude and impact of the particular components of a release	NUREG-0654: I.3, I.4, I.6, I.8, I.9, I.10
18	Capability for post-accident coolant sampling and analysis.	NUREG-0654: I.2

03.04 Submit scenario comments.

- a. Comments about the scenario should have a regulatory basis. Comments, questions, or concerns should be provided to the licensee no later than 30 days prior to the scheduled exercise date.
- b. Schedule a call at least 30 days prior to the exercise with licensee EP Supervision and any other licensee participants (licensee discretion).
- c. Notify the licensee of the completion of the scenario review and identify any issues or concerns.
- d. If there is any disagreement, that cannot be settled, from the licensee on issues identified that would impact the ability to successfully meet the performance objectives, engage regional management and recommend the issues noted from the scenario review be provided to the licensee in a letter from the Region.

- e. Contact the Regional State Liaison Officer to submit and review any scenario comments to the Regional Assistance Committee Chair.

#### 71114.08-04 RESOURCE ESTIMATE

The estimated time to complete this inspection procedure is 12-16 hours. The time expended for this review is to be reported as direct inspection time.

#### 71114.08-05 PROCEDURE COMPLETION

This procedure is considered complete when all the inspection requirements listed in the procedure have been satisfied. Routine reviews of problem identification and resolution activities performed in this attachment should equate to approximately 10 to 15 percent of the resource estimate range described above. For the purpose of reporting completion in the Reactor Program System (RPS), the sample size is defined as one (1). The inspector shall ensure that a sample size of one (1) is reported in the RPS, Item Reporting, and completion noted in the RPS, Inspection Planning, when the procedure is completed in its entirety. However, reporting of sample sizes and inspection completion status shall reflect the same level of sensitivity (i.e., "Official Use Only - Security- Related Information") as inspection planning and documentation issues and shall not appear in any publicly available document.

#### 71114.08-06 REFERENCES

NSIR-DPR-ISG-01, "Emergency Planning For Nuclear Power Plants"

Order EA-02-026, "Order for Interim Safeguards and Security Compensatory Measures," February 25, 2002

SECY-03-0165, "Evaluation of Nuclear Power Reactor Emergency Preparedness Planning Basis Adequacy in the Post-9/11 Threat Environment," September 22, 2003

RG 1.214, "Response Strategies for Potential Aircraft Threats," September 2009

NEI 06-04, "Conducting a Hostile Action-based Emergency Response Drill" Rev. 2, Appendix A, "Drill and Exercise Objectives" (ML112091915)

END

Exhibit:  
Scenario Review Checklist

Attachment:  
Revision History for IP 71114.08

Exhibit 1 – Scenario Review Checklist

Exercise Location: \_\_\_\_\_

Planned Exercise Date: \_\_\_\_\_ 30 days before: \_\_\_\_\_ 60 days before: \_\_\_\_\_

Scenario Submittal Checklist Action	Notes
03.01 Verify the scenario submittal is complete by including:	
a. Exercise objectives that support demonstration of key skills in principle functional areas	
b. A timeline of exercise events	
c. A description of any imbedded drills	
d. A description of key injects and messages	
e. The expected ERO and ORO participation	
f. Plant and player safety considerations	
03.02 Review the scenario for the following:	
a. Verify scenario contains minimum expected elements:	
1. Event classification.	
2. Timely notification of offsite authorities.	
3. PAR development (development of PARs involving public evacuation or sheltering is required only in exercises that include a General Emergency).	
4. Radiological assessment.	
5. Shift staff response to accident transients or other events that meet EAL criteria while implementing the emergency plan.	
6. ERO response and ERF activation following declared emergencies	
7. Integration of licensee response with OROs to include briefings, coordination of worker protection, and, as appropriate to the scenario, coordination of public protective actions radiological release monitoring, and offsite response to the site.	
8. Communications between onsite and offsite ERFs	
9. Dissemination of information to the public via media channels and press briefings.	

10.	Development and implementation of radiological or physical protection (i.e., in response to HAB) protective actions for onsite workers as appropriate to the scenario.	
11.	Operational and engineering assessment of accident sequences.	
12.	Accident mitigation by simulated equipment repair. This must include mechanical, electrical, and/or instrumentation and control activities. The scenario should allow some repairs to be successful, but must provide the opportunities to demonstrate mitigation planning, repair execution and radiological control support of repair teams.	
b.	The scenario is sufficiently varied from the last biennial exercise, and any off-year exercise(s), integrated response facility drill, etc. used in the last 2 years by ensuring that:	
1.	No more than one EAL is common to the previous exercise or any practice drills/exercises conducted in preparation for this exercise.	
2.	Failure mechanisms used for reaching initiating conditions and the failed equipment is varied to the extent practical.	
3.	The exercise scenario has not been used as a drill within the last 2 years, or used for a practice drill for the present biennial exercise.	
c.	That ERO pre-conditioning is avoided by ensuring scenario timeline and or initial conditions do not provide obvious clues of impending equipment or system failures.	
d.	To the extent possible, scenario and exercise play requires the ERO “earn” event information.	
e.	DEP PI opportunities are clearly identified.	

03.03	Evaluate the ability of the scenario to provide opportunities for the ERO to demonstrate proficiency in key skills by ensuring:
a.	Opportunities provided during drill and or exercise to develop and maintain key emergency response skills as follows:
1.	Demonstration of all functions in each ERF (e.g., all ERFs that are responsible for dose assessment perform those duties in response to a radiological release).
2.	The use of alternative facilities to stage the ERO for rapid activation during a hostile action.
3.	Real-time staffing of facilities during off-hours (i.e., 6:00 p.m. to 4:00 a.m.).
4.	Provide medical care for injured, contaminated personnel (every two years).
5.	Response to essentially 100% of EAL initiating conditions.
6.	Response to actual industry event sequences appropriate for the nuclear plant technology (e.g., BWR or PWR).
7.	All licensee ERO teams must be provided the opportunity to demonstrate key skills within the scope of their duties.
8.	Use of procedures developed in response to an aircraft threat and in compliance with 10 CFR 50.54(hh)(1).
9.	Use of the strategies associated with 10 CFR 50.54(hh)(2) to mitigate spent fuel pool damage scenarios (all strategies, such as makeup, spray, and leakage control, but not every variation of a given strategy).
10.	Use of the strategies associated with 10 CFR 50.54(hh)(2) to mitigate reactor accidents and maintain containment (10 strategies for boiling water reactors and 7 strategies for pressurized water reactors, but not every variation of a given strategy).
b.	Scenario data and progression of events are credible, logical and challenges the ERO to demonstrate their proficiency, particularly in accident assessment.
c.	In addition to the above, hostile action based (HAB) scenarios should be reviewed for the following considerations:
1.	HAB scenarios should vary the radiological release from exercise to exercise.

2.	Mitigative measures should commence after the simulated active attack has ceased but before Local Law Enforcement Agencies (LLEA) have swept the site for safe entry or declared the site secure.	
3.	The planning necessary to conduct a HAB exercise will challenge expectations for scenario confidentiality. Scenarios used for hostile action biennial exercises must be sufficiently different from those used in drills/exercises during the previous 2 years. Specifically, the elements and consequences of the hostile action must be varied (e.g., attack type or direction, number of attackers, attack timeline, damage, casualties, offsite consequences, etc.). Provided that the above requirements are met, it is acceptable for the same ERO members to participate in hostile action drills or practice exercises and the subsequent biennial exercise.	
4.	Review HAB Scenario objectives for completeness. Refer to NEI 06-04, "Conducting a Hostile Action-based Emergency Response Drill" Rev. 2, Appendix A, "Drill and Exercise Objectives"	
d.	Review records/schedule required for the eight year exercise scenario cycle to include:	
1.	Response to hostile action, including interface with LLEAs.	
2.	Engineering assessment, repair plan development, and physical repair of critical equipment damaged by hostile action after the active attack, but before the site is secured by LLEAs.	
3.	Response to one scenario with no radiological release or an unplanned minimal radiological release that does not require evacuation or sheltering of the public.	
4.	Response to a scenario with radiological releases that require evacuation and/or sheltering of the public.	
5.	Response to a scenario that begins with a Site Area Emergency or General Emergency, or escalates rapidly (within 30 minutes) to an SAE or GE.	
6.	Successful simulated repair of simulated damaged equipment to prevent or mitigate core damage, reactor vessel loss, and/or containment loss.	

7. Demonstration of the ability to mitigate an accident through the simulated use of equipment, procedures, and strategies developed in compliance with 10 CFR 50.54(hh)(2).	
8. Demonstration of each of the licensee's site specific reactor technology or vintage at least once during the exercise cycle.	
03.04 Submit and review exercise scenario comments with FEMA. Provide any exercise comments, questions or concerns to the licensee no later than 30 days prior to the scheduled exercise date.	

Attachment 1 - Revision History for - IP 71114.08

Commitment Tracking Number	Accession Number Issue Date Change Notice	Description of Change	Description of Training Required and Completion Date	Comment and Feedback Resolution Accession Number (Pre-Decisional, Non-Public Information)
N/A	ML12191A249 09/19/12 CN 12-021	Initial Issuance.	Yes - Provided at EP Face to Face counter-part meeting 09/09/2011 & 05/31/2012	ML12191A255
	ML15237A301 07/21/16 CN 16-017	<p>Removed “to the RAC Chair” from the title of step 03.04 to “Submit scenario comments to the RAC Chair” and added detail describing scenario comment documentation expectations.</p> <p>Feedback Form 71114-1925 – Align procedure with standard section numbering format of completion section under 71114.08-05 and the references under 71114.08-06</p> <p>Added to section 71114.08-05 “Procedure Completion” the IP 71152 “Problem Identification and Resolution” expectation for routine PI&amp;R activity reviews to be approximately 10 to 15 percent of the baseline cornerstone inspection procedure resources estimates. The 10 to 15 percent approximation is based on the overall expected inspection effort and is a general estimate only.</p>	None required	<p>Comment Resolution – ML15237A344</p> <p>Feedback Form – 71114.08-1925 (ML15237A307)</p>