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Subject: RESPONSE: RUG Query on 50.54(hh)(2)/EDMG Demonstration
Date: Thursday, March 5, 2020 6:57:38 AM
Attachments: [EDMG Strategy Demonstration.pdf](#)

Region IV EP RUG Members:

During the February 7th face-to-face meeting in Arlington, the NRC Region IV Team took an action to validate information and provide some additional guidance for the stations as the 8-year exercise cycle comes to an end and many of the stations still needed to demonstrate the EDMG/50.54(hh)(2)/50.155(b)(2) strategies in conjunction with their last biennial exercise in the cycle. Following further conversations with NSIR and our peers in the other Regions, we compiled the attached document which highlights the relevant guidance and requirements for this exercise element, providing context where appropriate.

The bottom line messages from the attached could be summarized as follows:

- EDMG/50.54(hh)(2)/50.155(b)(2) strategies are required to be demonstrated as part of a biennial exercise process.
- The demonstration may be completed as an out of sequence activity with partial participation by the key ERFs/ERO members needed to demonstrate those related key skills.
- If a station plans to demonstrate the strategies outside of the biennial exercise week, the NRC inspectors request prompt communication of this plan to support additional inspection planning activities, as our observation is a required element of IP 71114.01.

Thank you,

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Guidance Summary: 50.54(hh)(2)/50.155(b)(2) [EDMG] Scenarios in the 8-Year Cycle

[Title 10 CFR 50, Appendix E, IV.F.2.i](#), states:

*“... Additionally, in each 8-calendar-year exercise cycle, nuclear power reactor licensees shall vary the content of scenarios during exercises conducted under paragraph 2 of this section¹ to provide the opportunity for the ERO to demonstrate proficiency in the key skills necessary to respond to the following scenario elements: hostile action directed at the plant site, no radiological release or an unplanned minimal radiological release that does not require public protective actions, an initial classification of or rapid escalation to a Site Area Emergency or General Emergency, **implementation of strategies, procedures, and guidance under §50.155(b)(2)**², and integration of offsite resources with onsite response.”*

To be clear, the “strategies, procedures, and guidance under §50.155(b)(2)” are those activities previously or also referred to as “B.5.b,” “§50.54(hh)(2),” “Extensive damage mitigation guideline,” or EDMG strategies.

Further the intent of the variation is that the licensees demonstrate:

“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).” (per [NSIR/DRP-ISG-01, “Interim Staff Guidance Emergency Planning for Nuclear Power Plants,”](#) pg 31)

As such, associated with one of the biennial exercises, licensees need to demonstrate one of the 10 strategies for BWRs, OR one of the 7 strategies for PWRs, created to mitigate reactor accidents and maintain containment and/or spent fuel pool capabilities (as described in NEI 06-12, “B.5.b Phase 2 & 3 Submittal Guideline,” and endorsed by the NRC).

Further, ISG-01, pg 33 (2nd full paragraph) states:

*“The portion of a biennial exercise that involves **demonstration of strategies associated with 10 CFR 50.54(hh)(2) [now 50.155(b)(2)]** may be conducted separately from the main exercise timeline and sequence of events. Thus, the initiating event(s) for entry into site-specific guidelines or procedures associated with 10 CFR 50.54(hh)(2) [50.155(b)(2)] may differ from the initiating event(s) of the main exercise scenario and could involve an initiating event other than hostile action, such as a fire, flood, or explosion affecting large areas of the site, or station blackout. **At a minimum, TSC and OSC staff would need to participate in this portion of the exercise.** Participation of CR personnel, EOF staff, JIC staff, and offsite officials may be simulated consistent with the purpose of this portion of the exercise to maintain key ERO skills for familiarity with guidelines, procedures, and strategies associated with 10 CFR 50.54(hh)(2) [50.155(b)(2)], including the (simulated) deployment and use of equipment associated with these strategies and intended to maintain or restore core cooling, containment, and/or spent fuel pool cooling. **The portion of the exercise scenario addressing demonstration of 10 CFR 50.54(hh)(2) [50.155(b)(2)]-related strategies should be included in the licensee’s submittal of the biennial exercise scenario for NRC review.**”*

The intent of these statements is to clarify that the EDMG strategy demonstration may be done as an “add on”/out of sequence portion of the biennial exercise (and may have a different set of initiating events) from the “core” biennial exercise scenario.³ However, this statement is NOT intended to imply that the EDMG demonstration could be done as part of an off-year exercise or other drill activity.

To get credit for the 50.54(hh)(2)/50.155(b)(2) element, the scenario must be such that the licensee shall demonstrate implementation of one of the 7 (PWR) or 10 (BWR) EDMG strategies described in NEI 06-12.

¹ The exercises referred to are the biennial evaluated exercises.

² Originally the citation was §50.54(hh)(2), but those requirements moved to §50.155(b)(2) with subsequent rulemaking.

³ As this is a permissive statement, the EDMG strategy demonstration may also be completed as part of the core biennial exercise timeline of events – as some licensees have done.

This does not necessarily mean that those strategies are required to flow from a large fire or explosion affecting a large area of the plant, but those are possible paths for doing so. Further procedural cues to drive the use of EDMG strategies for situations other than large fires/explosions should be clearly defined. This is further elaborated in ISG-01, starting on the bottom of page 32:

“Although an important consideration for the development of 10 CFR 50.54(hh)(2) is the threat of hostile action, NEI 06-12, “B.5.b Phase 2 & 3 Submittal Guideline,” Revision 2, December 2006 (ADAMS Accession No. ML070090060), notes that the deployable generic enhancement strategies could be beneficial in responding to a broad spectrum of damage states. This being the case, it is not necessary or desirable that the strategies only be used in hostile action scenarios. The guidance recommended that entry conditions beyond large fires and explosions should be considered and that implementing procedures should discuss how the strategies may be useful for mitigation of other beyond design basis conditions. These discussions may contribute to scenario development.”

The guidance in the newly released FEMA REP-1/NUREG-0654, Revision 2, states, in part:

N.3 Exercise Scenario Elements. During each eight-year exercise cycle, biennial, evaluated exercise scenario content is varied to provide the opportunity to demonstrate the key skills and capabilities necessary to respond to the following scenario elements:

N.3.e 10 CFR 50.54(hh)(2) Strategies. Demonstration of the use of equipment, procedures, and strategies developed in compliance with 10 CFR 50.54(hh)(2).

[Note this element is only applicable to “Licensees”]

These statements are consistent with the Appendix E requirements and align with the aforementioned discussions in the ISG-01.

Impact on Inspection & Planning

Finally, with regard to inspection activities related to the EDMG strategies, [Inspection Procedure 71114.01](#) clearly delineates that inspectors are expected to observe demonstration of the EDMG strategies as related to the E-Plan commitments (see Section 03.04) when demonstrated as part of a biennial exercise activity.

In that the requirement is to include the strategy as part of the biennial exercise “process,” the underlying assumption is that the inspection activities would occur during the biennial exercise week, even if included as an “add-on” scenario, or an out of sequence activity (as described by the ISG-01).

However, if a station provides the information related to EDMG strategy demonstration with the biennial exercise scenario information (i.e., 60 day submittal), but intends to demonstrate the EDMG strategies as an out-of-sequence scenario NOT during the scheduled biennial exercise week, the inspectors request that the station promptly communicate with the Region such that we can appropriately plan for the additional inspection activities.

An opportunity for this communication would be during the “kick off call” typically held between the NRC Inspection Team Leader and the station EP Manager/Lead Controller approximately 80-90 days prior to the exercise (prior to the 60-day scenario submission), though discussions on this topic as early as possible are highly desirable.