

NRR-PMDAPEm Resource

From: RILEY, Jim [jhr@nei.org]
Sent: Friday, September 26, 2014 9:53 AM
To: Kuntz, Robert
Cc: Whaley, Sheena; Bell, Roderick; Brunette, Pat; Colin Keller; Dean Hubbard (dmhubbard@duke-energy.com); DeMoss, Gary; Don Bentley (DBENTLE@entergy.com); Doug True; GASPER, JOSEPH K; Geiger, Charlotte; George Attarian; Giddens, John; Glen D Ohlemacher (ohlemacher@dteenergy.com); Hammons, Mark A.; Heather Smith Sawyer (heather.sawyer@bwsc.net); 'Huffman, Ken'; RILEY, Jim; joe.bellini@aterrasolutions.com; John Lee (John.Lee@dom.com); Kapitz, Jon K.; Lewis, Stuart; Maze, Scott; Michael Proctor (michael.proctor@urs.com); Miller, Andrew; Pete Sena (senap@firstenergycorp.com); POLLOCK, Joseph; Ray Dremel (rdremel@enercon.com); Ray Schneider (schneire@westinghouse.com); Rohrer, Rick J.; rudy_gil@fpl.com; Ruf, Gary (Gary.Ruf@pseg.com); SCAROLA, James; Selman, Penny; Spink, Thomas E <tespink@tva.gov> (tespink@tva.gov); TSCHILTZ, Michael
Subject: Revised Versions of FAQs 033 and 035
Attachments: FAQ 33 - Interim Actions for Partial Mitigation Rev 1b.doc; FAQ 035 - HRR Revisions rev f.doc

Sheena, Rob;

I have attached revised versions of FAQs 033 and 035 that reflect the comments I recorded at our last meeting. I would like to discuss these at our webinar on October 25th. Hopefully we can close these out at that time.

Thanks,

Jim Riley

NEI

W: (202) 739-8137

C: (202) 439-2459

jhr@nei.org

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From: RILEY, Jim

Created By: jhr@nei.org

Recipients:

"Whaley, Sheena" <Sheena.Whaley@nrc.gov>
Tracking Status: None
"Bell, Roderick" <roderick.bell@ge.com>
Tracking Status: None
"Brunette, Pat" <pbrunette@enercon.com>
Tracking Status: None
"Colin Keller" <kellerc@firstenergycorp.com>
Tracking Status: None
"Dean Hubbard (dmhubbard@duke-energy.com)" <dmhubbard@duke-energy.com>
Tracking Status: None
"DeMoss, Gary" <gary.demoss@pseg.com>
Tracking Status: None
"Don Bentley (DBENTLE@entergy.com)" <DBENTLE@entergy.com>
Tracking Status: None
"Doug True" <detrue@erineng.com>
Tracking Status: None
"GASPER, JOSEPH K" <jgasper@oppd.com>
Tracking Status: None
"Geiger, Charlotte" <Charlotte.Geiger@pseg.com>
Tracking Status: None
"George Attarian" <george.attarian@outlook.com>
Tracking Status: None
"Giddens, John" <jmgidden@southernco.com>
Tracking Status: None
"Glen D Ohlemacher (ohlemacherg@dteenergy.com)" <ohlemacherg@dteenergy.com>
Tracking Status: None
"Hammons, Mark A." <mah@ftn-assoc.com>
Tracking Status: None
"Heather Smith Sawyer (heather.sawyer@bwsc.net)" <heather.sawyer@bwsc.net>
Tracking Status: None
"Huffman, Ken" <khuffman@epri.com>
Tracking Status: None
"RILEY, Jim" <jhr@nei.org>
Tracking Status: None
"joe.bellini@aterrasolutions.com" <joe.bellini@aterrasolutions.com>
Tracking Status: None
"John Lee (John.Lee@dom.com)" <John.Lee@dom.com>
Tracking Status: None
"Kapitz, Jon K." <Jon.Kapitz@xenuclear.com>
Tracking Status: None
"Lewis, Stuart" <slewis@epri.com>

Tracking Status: None
 "Maze, Scott" <SxM9@pge.com>
 Tracking Status: None
 "Michael Proctor (michael.proctor@urs.com)" <michael.proctor@urs.com>
 Tracking Status: None
 "Miller, Andrew" <APMiller@erineng.com>
 Tracking Status: None
 "Pete Sena (senap@firstenergycorp.com)" <senap@firstenergycorp.com>
 Tracking Status: None
 "POLLOCK, Joseph" <jep@nei.org>
 Tracking Status: None
 "Ray Dremel (rdremel@enercon.com)" <rdremel@enercon.com>
 Tracking Status: None
 "Ray Schneider (schneire@westinghouse.com)" <schneire@westinghouse.com>
 Tracking Status: None
 "Rohrer, Rick J." <Richard.Rohrer@xenuclear.com>
 Tracking Status: None
 "rudy_gil@fpl.com" <rudy_gil@fpl.com>
 Tracking Status: None
 "Ruf, Gary (Gary.Ruf@pseg.com)" <Gary.Ruf@pseg.com>
 Tracking Status: None
 "SCAROLA, James" <jxs@nei.org>
 Tracking Status: None
 "Selman, Penny" <pbselman@tva.gov>
 Tracking Status: None
 "Spink, Thomas E <tespink@tva.gov> (tespink@tva.gov)" <tespink@tva.gov>
 Tracking Status: None
 "TSCHILTZ, Michael" <mdt@nei.org>
 Tracking Status: None
 "Kuntz, Robert" <Robert.Kuntz@nrc.gov>
 Tracking Status: None

Post Office: mbx023-e1-nj-2.exch023.domain.local

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FAQ 33: HRR – Options for Interim Actions for Challenging HRRs

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|---|
| A. TOPIC: HRR – Options for Interim Actions for Challenging HRRs |
| Source document: <u>March 1, 2013 Eric Leeds 50.54(f) Supplemental Information Letter</u> Section: <u> </u> |
| B. DESCRIPTION: What options could be considered to develop interim actions as part of the Hazard Reevaluation Report submittal if the reevaluated hazard is particularly challenging? March 1, 2013 Eric Leeds 50.54(f) Supplemental Information Letter states the following: <i>"Interim Actions (Requested Information Item 1.d)</i> <i>Licensees whose Hazard Reevaluation results are not bounded by their current design basis were requested to describe in their 50.54(f) letter response interim actions, taken or planned, to address the reevaluated flooding hazard while the staff assesses the safety and regulatory significance of the reevaluated hazard. The staff's review of the proposed interim actions will leverage appropriate sections and concepts from existing guidance documents such as NEI 1207, "Guidelines for Performing Verification Walkdowns of Plant Flood Protection Features and JLD-ISG-2012-05, "Guidance for Performing the Integrated Assessment for External Flooding to evaluate the acceptability of the interim actions.</i> <i>Licensees should describe the interim actions in sufficient detail to allow the NRC staff to assess their acceptability, in order to allow licensees the time needed to perform the integrated assessment and then implement permanent plant modifications, if necessary. The NRC staff will consider the appropriateness of the interim actions in the context of a licensee's ability to respond to the reevaluated flooding hazard(s) and how these actions continue to provide assurance of the licensee's ability to maintain the plant in a safe condition."</i> |
| C. Initiator: Name: <u>Jim Riley</u> Phone: <u>202-739-8137</u> Date: <u>1/8/14</u> E-Mail: <u>jhr@nei.org</u> |
| D. RESOLUTION: (Include additional pages if necessary. Total pages: <u>4</u>) Inquiry number: <u>33</u> Priority: <u>H</u> <u>Requested Information item 1.d of Enclosure 2 to the NRC letter states that the final report should contain "Interim evaluations and actions planned to address any higher flooding hazards relative to the design basis, prior to completion of the integrated assessment described below, if necessary." This FAQ captures thoughts on hazard reevaluations related to appropriate interim actions, and concepts for interim actions.</u> <u>The Basis for Interim Actions Flooding Hazard Reevaluations</u> <u>The NRC's March 2012 50.54(f) cover letter states that the current regulatory approach and the resultant plant capabilities provide confidence that an accident with consequences similar to the Fukushima accident is unlikely to occur in the United States. The NRC letter concluded that continued plant operation and the continuation of licensing activities do not pose an imminent risk to public health and safety. Requested Information item 1.d of Enclosure 2 to the NRC letter states that the final report should contain "Interim evaluations and actions planned to address any higher flooding hazards relative to the design basis, prior to completion of the integrated assessment described below, if necessary."</u> |

FAQ 33: HRR – Options for Interim Actions for Challenging HRRs

~~The deterministic methods used to reevaluate flooding hazards in accordance with present day methodologies (hierarchical hazard assessment - HHA) can drive conservative results depending upon what assumptions were used and how they relate to actual conditions. Furthermore, the flooding reevaluations being performed in response to the NRC's March 12, 2012 50.54(f) letter are for describe beyond design basis events. As such, they do not constitute an immediate operability concern and are not reportable outside of the response to the 50.54(f) letter unless the reevaluation results identify concerns with the current licensing or design basis. (Note however, that the new condition may need to be entered into the corrective action program for evaluation).~~

~~The beyond design basis nature of these evaluations, the general likelihood of the associated assumptions, and the risk to the plant posed by the hazard should be taken into account as interim actions are considered and planned.~~

~~Concepts for Interim Actions~~ ~~Basis for Interim Actions~~

~~Based on the conservatism in the deterministic approaches being used to reevaluate flooding hazards in accordance with present day methodology, these events could be very unlikely events. If the results of the reevaluated hazard exceed the current design basis, interim actions should be implemented as soon as reasonable. Interim actions should focus on assuring the ability to cool the core and spent fuel, and prevent large offsite radioactive release in the event the beyond design basis flood determined in the Hazard Re-evaluation Report (HRR) were to occur.~~

~~The time frame for development and deployment of interim actions should be informed by the relative risk(s) and frequency of occurrence (if known) of the updated flooding event evaluated for the Hazard Reevaluation Report (HRR). The time frame will also be impacted by the significance of the scope of the interim actions, and time needed to develop and implement them, and the relative safety or risk priority of these activities as compared to other activities planned for the site. Interim actions should focus on assuring the ability to maintain the key safety functions necessary to prevent core damage, spent fuel damage, and loss of containment as a result of the new beyond design basis flood determined in the Hazard Re-evaluation Report (HRR).~~

~~The NRC has described interim actions in the March 1, 2013 Eric Leeds 50.54(f) Supplemental Information Letter. Also, the NRC inspection procedure TI- 2515/190, used to inspect interim actions at the sites, provides additional insights on the appropriate actions to be put in place.~~

~~Concepts for Interim Actions~~

~~In some cases, the severity of the hazard defined by described in the HRR will be such that the event will be particularly challenging to the CDB. As the licensee is considering its strategy, the following concepts might be useful. NRC concerns identified during meetings on the subject are shown in brackets using italicized font. Licensees should keep the NRC concerns in mind as they consider these concepts in the determination of interim actions intended to mitigate their plant specific hazards.~~

~~*[General NRC Concern: The NRC's main message during the discussion of this FAQ was that situations where the calculated flooding event is particularly challenging need to be handled on a case-by-case basis. Licensees should contact their NRC Project Manager prior to the HRR submittal to explain the conditions and explore options. In addition, since the 50.54(f) letter requests that the HRR should include interim evaluations and actions taken or planned in cases where the flooding CDB is exceeded, any licensee HRR submittals that show results greater than the flooding CDB and which do not identify interim evaluations or actions will receive particular scrutiny.]*~~

- ~~Implement all practical protection and mitigation strategies: Recognizing that the event may have a low frequency of occurrence, consider enhancing the existing mitigation strategies or flood protection~~

FAQ 33: HRR – Options for Interim Actions for Challenging HRRs

features and implement new ones to the maximum extent practical. Any amount by which the current flood protection and mitigation features are enhanced makes the likelihood of exceeding their capabilities less.

- Refine the hazard considered: For the most part, the flooding hazard determination is a deterministic evaluation using the conservative combinations of parameters and events defined by the various governing regulatory guides, NUREGs, ISG documents, and standards. The resulting flooding hazard may be an unlikely event. ~~Since the reevaluated flooding hazard is a beyond design basis event for existing plants, it~~ is reasonable to ~~further~~ refine the analysis of the reevaluated hazard in accordance with the hierarchical approach described in the applicable guidance to achieve more realistic results ~~credible event~~ (as opposed to a bounding event that may result from a full application of the conservatisms in the governing guidance documents). The more realistic results should lead to less onerous interim actions. Precedent evaluations should be reviewed and additional research may be warranted to justify the use of alternate methods.

{NRC commented that the likelihood of a given hazard is very plant specific. As a result, the event determined by the deterministic evaluation methods described in the various Reg Guides and other documents may not be unlikely in all cases.}

- Monitoring: Monitor the status of input parameters whose assumed values drive the reevaluated flood hazard and take a graded approach to actions as those parameters approach their assumed values. This monitoring should include communication and coordination with other federal agencies that possess information relevant to the hazard (e.g., USACE for dams, NWS for hurricanes and storm surge, etc.). Ensure that adequate communication procedures are established and in place in order to take credit for this action.

For example, if conditions indicate that the probability of a challenge to a dam is increasing, communication should be established with the dam operator to determine the possibility of increased monitoring and inspection of the dam's condition. If a dam failure evaluation assumes a 100 year snow pack, monitor the actual snow pack at an appropriate frequency, increase the frequency if a defined threshold is reached, engage the operator of the dam to evaluate plans for water management if the snow pack continues to increase, and shutdown the plant if the 100 year snow pack is reached and the resulting flood cannot be fully protected or mitigated. In addition, inspections of yard drainage systems and clearing of any blockage could reduce the severity of flooding should it occur.

- Use of "FLEX"-type equipment: FLEX was designed as a means of mitigating beyond design basis events. To the extent that it is implemented at a site, FLEX equipment, or other equipment with similar functionality, could be considered to maintain key safety functions. If this strategy is used, ensure that FLEX equipment storage locations, connection points, and associated procedures appropriately consider the flood height and conditions determined by the reevaluation results so that equipment access and functionality are maintained.

{NRC has commented that it is acceptable to use FLEX equipment to mitigate the hazard determined by the HRR.}

- Allowing flood waters to enter plant buildings: The key safety functions to maintain are core and spent fuel pool cooling and containment. In some extreme situations a strategy such as removing the vessel head, flooding up the vessel and refueling canal, and allowing flood waters to enter site buildings with the possible loss of SSC's that are not required to provide the necessary cooling function, may be necessary.

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Note that interim actions do not have to be permanent modifications. The Integrated Assessment will determine the long term mitigation or protective actions that will be considered by the NRC during their 10CFR50.54(f) letter section 2.1 Phase 2 review to determine if any regulatory actions are needed to protect against the updated flooding related hazards (e.g., include in the site’s licensing basis and mitigation strategy).

NOTE: FAQ-031 also contains guidance on interim actions.

Revision: 1a1b Date: 7/308/2109/25/14

E. NRC Review:

Not Necessary _____ Necessary X

Explanation: _____

F. Industry Approval:

Documentation Method: _____ Date: _____

G. NRC Acceptance:

Interpretation _____ Agency Position _____

Documentation Method: N/A Date: _____

FAQ 035: HRR Revisions

A. TOPIC: HRR Revision Process

Source document: Fukushima Response 50.54(f) letter Enclosure 2 Section: Required Response

B. DESCRIPTION:

REQUIRED RESPONSE item 2 states that licensees must submit Hazard Reevaluation Reports (HRRs) in accordance with the NRC's prioritization plan and within 1 to 3 years after the date of the information request letter. The description of the response is silent on when and how to submit updated information that changes the results previously submitted in the HRR. Under what circumstances and processes should updated information to the HRR be submitted?

C. Initiator:

Name: Jim Riley Phone: 202-739-8137

Date: 06/26/14 E-Mail: jhr@nei.org

D. RESOLUTION: (Include additional pages if necessary. Total pages: 2)

Inquiry number: 035 Priority: H

The NRC prefers that HRRs not be revised except in the case where the licensee finds an error in the initial submittal because a revised submittal would be a burden on NRC resources (since their review might have to be restarted) and would cause a delay in closure of the 50.54(f) response. However, licensees may have additional compelling reasons for revising their HRRs such as improved assumptions, or updated models or analysis. In any case, if a revised HRR submittal is planned, inform the NRC in advance and explain the reason for the change.

There are two aspects-considerations related to the question of HRR revision: (1) under what circumstances is it worthwhile to revise and resubmit the HRR, and (2) when should the revision be submitted to minimize disruptions in the review process.

Circumstances

HRR revisions are expensive for the licensee and challenging to the overall 50.54(f) response schedule and to NRC review resources. Revisions would normally not be undertaken unless the changes are significant. However, significance is not measured only by changes in flood level, for example:

- If an error is discovered in the evaluation, the NRC should-must be informed and a revision would normally be submitted. However, if the error is not substantive (i.e., it will not affect SSCs that are important to safety or flood protection or change plant response) a revised submittal may not be necessary, however, the NRC must concur with this decision.
- Small relative changes in flood level can have a large effect on the plant if the change in water level either avoids or causes overtopping of a flood barrier.
- Revisions to hazard evaluations that substantially impact warning time could either prevent or allow completion of manual actions that would otherwise not be possible, or allow use of passive protection in place of more costly measures such as automatic protection or mitigation.

Ultimately, a revised HRR submittal should not be undertaken unless the original HRR was in error, or the improvement in results allows a reduction in simpler plant response such that the benefits cost, schedule, or resource savings outweigh the cost-expense of revision.

FAQ 035: HRR Revisions

Timing

HRR revisions can be submitted at any time, but the following options describe opportunities during the review process. Note:

- Revisions to the HRR after the initial submittal may result in wasted review effort and schedule delays. Notify the NRC as soon as it is realized that a revision is planned in order to minimize these effects.
- It will normally not be acceptable to commit to revising the hazard evaluation as one of the "interim evaluations and actions taken or planned" identified in the HRR submittal (see Requested Information item 1.d in Enclosure 2 of the 50.54(f) letter). The NRC has stated that this would be considered a partial submittal since it would be known at the time that the initial results were not final, and the Staff has decided not to accept partial HRR submittals. In this case the licensee should request an extension to the submittal date.

~~1. As part of the initial HRR submittal, commit to revising the HRR as part of the response to Requested Information item 1.d in Enclosure 2 of the 50.54(f) letter ("interim evaluation and actions taken or planned").~~

1. Submit a revised hazard analysis in response to a RAI on the HRR submittal. Recognizing the time limit for responding to most RAIs, if the updated analysis has not already been completed the response could commit to completing an updated analysis by a specified date.
2. ~~Submit the new hazard analysis information as the basis for an update to the interim actions. The NRC has required sites to notify them if there are any changes to the interim actions listed in the HRR. The~~ New information could impact margin (positively or negatively) and ~~would~~ could provide a basis for revisions to the flooding response strategy and interim actions. If changes to interim actions are necessary, the NRC must be notified. A revised hazard analysis might be necessary to justify the interim action changes.
3. Include the new hazard analysis information as part of the Integrated Assessment (IA) and address both the original and revised hazards in parallel showing the consequences of, and response to, both the HRR flooding level and the updated HMR-HRR flooding level.
4. Include the new hazard analysis information as an addendum or revision to the initial IA submittal. This should include a description of the changes to the IA conclusions caused by the updated hazard analysis.

Any of these approaches would put the new information on the docket and, depending on the timing of the submittal, either enable the NRC to recognize its effects on margin as they make their decision on hazard inputs to be used in the Integrated Assessment, or influence any regulatory action taken during Phase 2 of the 50.54(f) response process.

Revision: 0d0ef Date: 08/012109/25/14

E. NRC Review:

Not Necessary _____ Necessary ?X
Explanation: _____

F. Industry Approval:

Documentation Method: _____ Date: _____

G. NRC Acceptance:

Interpretation _____ Agency Position _____

Documentation Method: _____ Date: _____