

**Comments of NRC Recommendation 2.1  
Flooding**

**Letter Content**

- The last sentence in the first paragraph in the “Requested Actions” section of the draft 10 CFR 50.54(f) letter requests an evaluation of loss of ultimate heat sink (UHS) due to low water level. Loss of UHS water source is not a flooding event. In addition, this requested action conflicts with the NRC slides presented during the January 13 Steering Committee meeting which stated that loss of UHS water source would be addressed in the tier 2 actions. Industry suggests that the item 2.1 response related to the UHS should evaluate loss of required mechanical components due to flooding (pumps, valves, etc.), not a loss of water source.

Several of the causes of a possible loss of UHS water source are related to “Other External Hazards” (other than seismic and flooding); therefore the loss of UHS water source might be more efficiently evaluated when “Other External Hazards” are addressed since for most plants the loss of UHS water source is a separate analysis. Note that in a separate comment, industry suggests that response to Recommendation 2.1 on “Other External Hazards” should be delayed unless they apply to a specific facility on an exception basis, due to their unique situation.

- The last paragraph in the “Requested Actions” section of the draft 10 CFR 50.54(f) letter requests that the spent fuel pool (SFP) be assessed for integrity and functionality against flood hazards. Flooding is not expected to affect SFP integrity. Industry requests that the assessment be limited to functionality.
- Industry recognizes that there are a number of guidance documents already in place for new plant flood evaluations, but the industry–NRC engagement over the next few months will establish some key assumptions and clarify some aspects of this guidance. These “clarification” items should be captured in a guidance document that should be issued before licensee flood evaluation efforts begin. (Some of these “clarification” items are included in these comments: e.g., list of references, definition of vulnerability, etc.) Industry proposes to prepare this guidance for NRC endorsement. This request is consistent with the NRC Near-Term Task Force recommendation on this subject. If the NRC agrees that separate guidance should be developed, the 10 CFR 50.54(f) letter should use flexible language such that the proposed guidance can be developed and implemented effectively.
- Flood evaluation criteria should not change while we are developing evaluation guidance and completing analyses. However, on page 3, the draft letter discusses the in-process RG 1.59 revision and also states that the NRC would evaluate the issues raised by the proposed GI-204 on upstream dam failure if the GI is approved. Industry supports a recommendation discussed during a Flooding Task Force / NRC Staff meeting on January 18, 2012 that proposed that the industry and the NRC would develop a list of flood hazard references (in place as of a specified date) that should be used by all flood evaluations prepared in response to the 10 CFR 50.54(f) letters.

- The word “vulnerability” is defined in different ways in different parts of the draft letter. The concept of “vulnerability” is an important aspect of licensee responses to the letter. Industry hopes to engage the NRC on the definition of vulnerability as part of the development of the guidance document for flood evaluations discussed above. In the interim, industry requests that the 10CFR50.54(f) letters not define this concept.
- It is not clear whether the “Requested Information” section is a description of the work that must be done to complete a flood evaluation or a description of the information that licensees will need to provide in response to the 10 CFR 50.54(f) letters. In addition, “Requested Information” items 2, 3 and 4 seem to provide different details on the same request (complete an analysis and report the results). Industry requests that the NRC revise the “Requested Information” section of the letter to clearly indicate what specific information is being requested for each item.
- During the Flooding Task Force meeting with the NRC on January 18, the staff seemed to agree that in cases where existing plants and new plants are co-located on the same site, the existing plants could use a gap analysis or comparison to the flood evaluation prepared for the new plant in lieu of completing another detailed flood evaluation. Expectations for this comparison could be the subject of future public meetings. In the interim, the 10 CFR 50.54(f) letters should be worded so that these comparisons are not disallowed.
- Item 5 of the “Requested Information” section of the draft letter discusses the information needed when existing flood protection features do not bound the new plant flood evaluation results (referred to in the flow chart accompanying the draft 10 CFR 50.54(f) letter as the “Integrated Assessment”). We understand that the NRC’s intent is to develop generic guidance for this purpose. Note that the industry plans to develop its “FLEX” concept as part of the approach to this condition; therefore, development and endorsement of implementation guidance for FLEX factors into the time needed to prepare the generic “Integrated Assessment” guidance. Completion of the FLEX implementation guidance is seen to be an essential component of the “Integrated Assessment” since the existence of a viable and endorsed approach to FLEX will influence the regulatory actions that the NRC may deem necessary if a licensee finds itself in this condition. This approach is used in the 10 CFR 50.54(f) response time information below.
- On page 10 of the draft letter, Step 10 states that a report should be submitted in accordance with the Requested Information items (7) through (12). If the item numbers refer to the flowchart at the end of the draft letter, the correct items numbers are (7) through (9).
- Page 12 item 3 (Dam Breaches and Failures) of the draft letter states that recent state and federal agency analyses can be used to evaluate dam failures. This statement should be clarified. Either the specific analyses that are being referred to should be identified or the statement should be reworded as a general recommendation to use recent reports with the appropriate pedigree from agencies with the appropriate jurisdiction. Some licensees may choose to do an independent assessment or study where the governmental agency report or analysis is judged to be not credible or relevant.

## **Letter Response Time**

The industry offers the following estimate of the time necessary to respond to the 10 CFR 50.54(f) letter for Recommendation 2.1: Flooding. The three major bullets under the "Response Time Estimate" heading below correspond to the three bullets in the "Required Response" section of the draft letter.

The estimated time in the second major bullet in the Response Time Estimate below (for all of the industry to complete the necessary flood evaluations) is six years after NRC endorsement of the generic evaluation guidance. Note that the following activities will ensure that plants will be identifying and, as necessary, addressing flood protection feature issues and beyond design basis considerations during the approximately six years it will take to complete all the new plant flood evaluations.

- Industry intends to work with the NRC to develop a prioritization scheme so that certain licensee flood evaluations (as determined by the prioritization scheme) will be submitted first and thereby inform the overall assessment of the implications of the new evaluations.
- In addition, the guidance being drafted for item 2.3 (flood design basis walkdowns) will identify concerns with the existing flood protection features and enter those observations into licensee Corrective Action Programs for disposition.
- Finally, when the FLEX approach is endorsed, it will ensure that a broad approach to addressing beyond design basis conditions is implemented in accordance with FLEX's approved timeline.

Response Time Estimate (major bullets below correspond to the 3 bullets in the draft letter):

- Submittal of a process to develop the information requested in item 5 of "Requested Information – by September 30, 2012" as explained below:
  - Obtain NRC endorsement of the FLEX guidance (proposed completion is discussed elsewhere in this letter):
    - by June 30, 2012
  - Complete integrated assessment guidance including addressing NRC comments during development (generic guidance is expected to be developed):
    - FLEX guidance endorsement plus 90 days
- Submittal of flood evaluations using new plant methodologies:
  - Generic activities:

- Prepare generic guidance on the process for flooding evaluations for NRC endorsement:
  - 3 months plus schedule for NRC endorsement
- Utility specific activities
  - Screen flood hazards for applicability and establish necessary contracts:
    - 3 months
  - Evaluation preparations (scoping, determine flooding design and licensing basis, collect data for evaluations, etc.):
    - In parallel with screening plus 4 to 6 months
  - Analysis completion by contractor (this estimate was informed by presentations on new plant flood hazard evaluation methods by 4 vendors that have already performed these evaluations):
    - 6 to 18 months
  - Utility evaluation of vendor results (internal review and comment and acceptance of vendor report):
    - 3 months
  - Write and approve response to 10CFR50.54(f) letter:
    - 2 months
  - Considering the above tasks, the approximate total time for each utility to complete a flooding evaluation:
    - 18 to 32 months – highly site-specific
- Low water level evaluations should not be part of the flooding evaluation, but assessed as part of the other external events evaluations
- Licensee submit response to “Requested Information” item 5 – 18 months after affected licensees completes its flood evaluation as explained below:
  - Complete site flooding hazards evaluation (depends on licensee)
  - Develop site implementation plan for additional protection/mitigation
    - 18 months after completing flood evaluation

NOTE: The maximum number of flooding evaluations that can be performed in parallel based on interactions with vendors familiar with the process is approximately 20. The

industry will work with the NRC staff to expedite the process, such as taking advantage of existing plants co-located with new plant sites that have been evaluated. In addition, the industry is prepared to work with the NRC staff to develop a prioritization scheme to ensure that priority is given to those plants that have a high flooding risk.

## Comments on NRC Flooding Recommendation 2.3

### Letter Content

- The last bullet under “Purpose” states that one of the purposes of the information request is to verify the adequacy of monitoring and maintenance procedures. Industry believes the intent of this statement is to assess the overall monitoring and maintenance of the flood protection features configuration, as opposed to maintenance of individual components that are credited for flood protection. Maintenance of individual components is covered by a licensee’s Preventive Maintenance Program and the effectiveness of that program is assessed regularly by internal utility procedures and processes. The industry requests that the NRC clarify this statement.
- Industry understands that the purpose of the flooding walkdowns requested in the draft generic letter is to compare existing flood protection features with the current design and licensing basis for flooding to identify any plant-specific issues and determine the adequacy of the maintenance of flood protection features. Keeping the information request focused on this objective is important to facilitate the timely completion of the walkdowns and avoid introducing any additional issues that might cloud interpretation of the information received. However, the “Requested Information” section of the draft letter includes a request to evaluate several items that are not within the current licensing basis for some or most plants. Industry requests that the following items be removed from the letter:
  - Item (1) requests a determination of cliff edge effect (the sharp increase in flooding risk associated with a small increase in flooding level). Determining this effect will require additional effort and, if necessary, should be part of the response to item 2.1.
  - Item (6) relates the scope of the walkdowns to cold shutdown. Not all plants are designed for cold shutdown in their current licensing basis.
- The second paragraph in the “Requested Actions” section contains several recommendations for the content of the walkdown procedure that seem to be inappropriate. Industry requests that these recommendations be revised to address the following comments:
  - Item (1) suggests that cable and piping trenches be protected from external ingress of water. It would seem more appropriate that any seals between these trenches and spaces containing safety related equipment be checked; water in the trenches is not as important since the cables and piping in the trenches should not be damaged by short term submergence.
  - Item (2) asks for information on water detection in “affected rooms”. The walkdowns should only confirm that water can be detected in rooms for which this capability is credited in the current design and licensing basis.

- The words “performance deficiencies” in item 3 of “Requested Actions” may cause some confusion as it relates to the term “vulnerabilities” in the same item. Many licensees relate the term “performance deficiencies” to violations. It is recommended that consistent terminology, in this case using only the word “vulnerabilities” be used throughout the 10 CFR 50.54(f) letter to ensure clear understanding.
- The last paragraph in the “Requested Actions” section of the draft 10 CFR 50.54(f) letter requests that the walkdowns assess spent fuel pool (SFP) integrity and functionality against flood hazards. Flooding is not expected to affect SFP integrity. The assessment should be limited to functionality.
- Item (7) of the section on “Requested Information” suggests that the walkdown team be composed of a variety of engineering disciplines, including hydraulic engineers. Industry interprets this to mean the entire team that is working on the walkdown effort should include this expertise (including the personnel evaluating the results as well as those inspecting the equipment). If this is also the NRC’s intent, the associated sentence should be clarified.
- The intent of the peer review process described in item 10 of the “Requested Actions” section is not clear. It is not apparent that a peer process focused on reviewing the walkdown guidance or the evaluation of its results is necessary since:
  - The industry is developing a template for the walkdown guidance and for the 10 CFR 50.54(f) letter response. This approach will use peer review “up front” to establish consistency and sufficiency.
  - Plant processes require independent verification when necessary and should be relied upon to determine when this is appropriate

Industry requests that the peer review action be removed.

## **Letter Response Time**

The industry offers the following estimate of the time necessary to respond to the 10CFR50.54(f) letter for recommendation 2.3: Flooding. The two major bullets below correspond to the two bullets in the “Required Response” section of the draft letter.

- Generic activities – 90 days plus NRC endorsement as explained below:
  - Prepare walkdown guidance for NRC endorsement and reference in utility response
    - 90 days
  - NRC endorsement
    - TBD
- Utility specific activities - 270 days after NRC endorsement of guidance as explained below:
  - Development of plant implementing document from generic guidance
    - 30 days

- Walkdown preparations (scope, assignment of teams, training, clearances, work package development, scaffolding, etc.)
  - In parallel with implementing document preparation plus 60 days
- Walkdown performance (allowing for access restrictions and outage impact)
  - 60 days
- Evaluate walkdown results
  - 60 days
- Write and approve walkdown report
  - 60 days
- Total time for each utility to complete walkdowns and submit report to the NRC
  - 270 days after NRC endorsement of guidance