

**From:** [RILEY, Jim](#)  
**To:** [Miller, Ed](#); [Cook, Christopher](#)  
**Cc:** [Abisamra, Joe](#); [Andrew Garrett \(Andrew.Garrett@Duke-Energy.com\)](#); [Attarian, George](#); [Bell, Roderick](#); [bolognar@firstenergycorp.com](#); [Brunette, Pat](#); [Buman, Dan](#); [Carrie L. Stokes \(carrie.stokes@bwsc.net\)](#); [Colin Keller](#); [Dave Bucheit](#); [Dean Hubbard \(dmhubbard@duke-energy.com\)](#); "Faller, Carl"; [Gambrill, David](#); [GASPER, JOSEPH K](#); [Giddens, John](#); [Glen D Ohlemacher \(ohlemacherg@dteenergy.com\)](#); [Hackerott, Alan](#); [Heather Smith Sawyer \(heather.sawyer@bwsc.net\)](#); [Heerman, John](#); [Horstman, William R](#); "Huffman, Ken"; [HYDE, KEVIN C](#); [Jeff Brown \(jeffrey.brown@aps.com\)](#); [Jim Breunig \(james.breunig@cengllc.com\)](#); [Joe Bellini \(joe.bellini@amec.com\)](#); [John Lee \(John.Lee@dom.com\)](#); [Kit Ng \(kyng@bechtel.com\)](#); [LaBorde, Jamie](#); [Larry Shorey \(ShoreyLE@Inpo.org\)](#); [Maddox Jim \(maddoxje@inpo.org\)](#); [Mannai, David J](#); [manolerasm@firstenergycorp.com](#); [Maze, Scott](#); [Michael Proctor \(michael.proctor@urs.com\)](#); [Mike Annon \(annonm@dteenergy.com\)](#); [Miller, Andrew](#); [Murray, Mike](#); [Peters, Ken](#); [Ray Schneider \(schneire@westinghouse.com\)](#); [RILEY, Jim](#); [Rob Whelan \(robert.whelan@ge.com\)](#); [Robinson, Mike](#); [Rogers, James G](#); [Rudy Gil](#); [Scarola, Jim](#); [Selman, Penny](#); [Shumaker, Dennis](#); [Snyder, Kirk](#); [Stone, Jeff](#); [Taylor, Bob](#); [Terry Grebel \(tlg1@pge.com\)](#); [Thayer, Jay](#); [Vinod Aggarwal \(Vinod.aggarwal@exeloncorp.com\)](#); [Wrobel, George](#); [Yale, Bob](#)  
**Subject:** FAQ and Presentation for Today and Tomorrow"s meetings  
**Date:** Wednesday, June 13, 2012 12:17:51 PM  
**Attachments:** [06-13-12 Presentation to NRC Evaluation Process and Inquiries.pptx](#)  
[Inq 004 APM Assessment - Significant Consequence.doc](#)

---

Ed,

Our presentation and one more FAQ on APM interim actions are attached.

*Jim Riley*

**Nuclear Energy Institute**  
1776 I St. N.W., Suite 400  
Washington, DC 20006  
[www.nei.org](http://www.nei.org)

phone: (202) 739-8137  
cell: (202) 439-2459  
fax: (202) 533-0193



FOLLOW US ON



*This electronic message transmission contains information from the Nuclear Energy Institute, Inc. The information is intended solely for the use of the addressee and its use by any other person is not authorized. If you are not the intended recipient, you have received this communication in error, and any review, use, disclosure, copying or distribution of the contents of this communication is strictly prohibited. If you have received this electronic transmission in error, please notify the sender immediately by telephone or by electronic mail and permanently delete the original message. IRS Circular 230 disclosure: To ensure compliance with requirements imposed by the IRS and other taxing authorities, we inform you that any tax advice contained in this communication (including any attachments) is not intended or written to be used, and cannot be used, for the purpose of (i) avoiding penalties that may be imposed on any taxpayer or (ii) promoting, marketing or recommending to another party any transaction or matter addressed herein.*

---

Sent through mail.messaging.microsoft.com

# **Flooding Issues: Guidance Inquiry Process, Hazard Re-evaluations**

**June 13, 2012**



# Discussion Points

- **Guidance Inquiry Process**
- **Reevaluations for Co-Located Sites**
- **Available Physical Margin Interim Actions**
- **Dam Failures**

# Guidance Inquiry Process Overview

- **NRC has endorsed guidance for flooding walkdowns (NEI 12-07)**
- **Licensees understand NUREG/CR-7046 is the current guidance for flooding re-evaluations**
  - **Guidance is somewhat limited for certain flooding-related issues**
  - **NEI will issue flooding re-evaluation guidance for information (no NRC endorsement needed)**

# Guidance Inquiry Process Overview

- **Application of guidance involves interpretations and assumptions**
- **White papers should be developed for key technical questions beyond the guidance**
- **A process is needed for evaluating, accepting, and documenting acceptable interpretations of guidance**

# Process Overview

- **NEI FFTF receives, addresses, and tracks status of inquiries**
- **Process provides for 3 “levels”**
  - **Simple questions**
    - Answered by e-mail
    - Posted on NEI Fukushima website if generic
  - **Simple interpretations**
    - Entered into the process
    - Dispositioned by the FFTF
    - Communicated to NRC
    - Posted on NEI Fukushima website

# Process Overview

- **More complicated inquiries**
  - **Entered into the process**
  - **Disposition drafted by the FFTF**
  - **Discussed with the NRC**
  - **Acceptable disposition is documented in a meeting summary or some other means of indicating NRC acceptance**
  - **Posted on NEI Fukushima website**

# Actions Needed

- **NRC near term concurrence with process**
  - **FFTF decisions on interpretations**
    - **Includes informing NRC of results**
  - **Documenting of acceptable interpretations when NRC review is necessary**
    - **Meeting summary**
    - **Letter**
  - **Need for short term turnaround on inquiries**



# Reevaluations for Co-Located Sites

- **The external flooding evaluations that have been submitted to the NRC based on NUREG-0800 for ESP/COL plants are considered equivalent to NUREG/CR-7046.**
- **These external flooding evaluations may be used as the basis for reevaluations for operating plants co-located on the same sites**
- **Supplemental evaluations may be needed when local site characteristics or structures affect other flooding mechanisms, drainage associated with local intense precipitation, wind-wave combined events at safety cooling water intake structures located on the coast or streamside, tsunami runup, dynamic loading conditions, etc.**

# Available Physical Margin Interim Actions

- Evaluation of small APMs and their consequences is “beyond design basis”
- Interim actions are expected if APM is small and consequences are significant
- Interim actions can utilize any available capability to satisfy the safety function that may be lost

# Dam Failures

- **Three levels of agreement**
  - **Can dam failure possibility be evaluated as opposed to assumed?**
  - **What factors must be addressed to assess the credibility of a dam failure?**
  - **What guidance is acceptable to consistently evaluate dam failure?**
- **Security threats are not being considered**

# Dam Failure

- **Providing guidance will facilitate consistency**
- **Overly conservative assumptions may result in conclusions that are not physically possible or reasonably mitigated**
  - **Evaluation is beyond design basis**
  - **Utility resources necessary to address the results may detract from safety-related activities**
- **Approach should be physics based and deterministic (conservative, but physically possible)**
- **HHA approach should be extended to dam failures**

# Dam Failure

- **Seeking acceptance of methods/approaches for defining breach parameters for dam failure evaluations**
  - **Breach geometry**
  - **Failure time**
  - **Type of breach**
- **Examples of breach development methods**
  - **Army Corps of Engineers 2007**
  - **Bureau of Reclamation 1998 (Wahl)**
  - **Dept of Interior 2009 paper (Xu, Zhang)**
- **Techniques (such as HEC-RAS, HEC-HMS, various proprietary models) determine failure results**

# Dam Failure

- **Mechanism to assess the technical acceptability of approaches**
  - **Review board of mutually acceptable experts to address technical differences / facilitate issue resolution**
- **Supports timely issue resolution and completion of reevaluations**

# Conclusions

- **Unintended outcomes may result from unnecessarily conservative approaches**
- **Evaluation process would benefit from a consistent, realistic approach**
- **Use of a physics based approach should be acceptable**
- **Develop approach via the FAQ process**

## Flooding Guidance Inquiry Form

**A. TOPIC:** Interim actions for small Available Physical Margin with significant consequence Inq. No.: 004

Source document: NEI 12-07 Section: 5.8

**B. DESCRIPTION:**

NEI 12-07 states that interim action should be taken if the Available Physical Margin is determined to be small and the consequences of flooding at the location of concern are significant (loss of safety function). Can credit be taken for safety related or non-safety related, redundant and diverse equipment in determining interim actions?

**C. Initiator:**

Name: Jim Riley Phone: 202-739-8137

Date: 06/06/12 E-Mail: [jhr@nei.org](mailto:jhr@nei.org)

**D. RESOLUTION:** (Include additional pages if necessary. Total pages: 1)

Evaluations of Available Physical margin address hypothetical situations that are beyond the current design basis. This is the case because the existence of any physical margin greater than or equal to zero means that the design basis is met and no further action is necessary. Licensees may take conservative, preemptive action when they address situations where the Available Physical Margin is small in order to minimize the possibility of addressing the condition if the result of flooding reevaluations challenges the existing design basis.

Since these evaluations assess beyond design basis conditions, it is acceptable for the interim actions to use any available capability to satisfy the safety function that would be lost if the Available Physical Margin was exceeded.

Revision: 0 Date: 6/6/12

**E. NRC Review:**

Not Necessary  Interpretation \_\_\_\_\_ Agency Position \_\_\_\_\_

Explanation: \_\_\_\_\_

**F. Industry Approval:**

Documentation Method: \_\_\_\_\_ Date: \_\_\_\_\_

**G. NRC Approval:**

Documentation Method: \_\_\_\_\_ Date: \_\_\_\_\_