



**JAPAN LESSONS-LEARNED DIVISION**

**JLD-ISG-2016-01**

**Guidance for Activities Related to Near-Term Task  
Force Recommendation 2.1, Flooding Hazard  
Reevaluation;**

**Focused Evaluation and Integrated Assessment**

**Interim Staff Guidance**  
*Revision 0*



# U.S. NRC

UNITED STATES NUCLEAR REGULATORY COMMISSION

*Protecting People and the Environment*

## JAPAN LESSONS-LEARNED DIVISION

### JLD-ISG-2016-01

## Guidance for Activities Related to Near-Term Task Force Recommendation 2.1, Flooding Hazard Reevaluation;

## Focused Evaluation and Integrated Assessment

### Interim Staff Guidance

*Revision 0*

**ADAMS Accession Nos.:** Pkg ML16162A439: **ISG:** ML16162A301:

FRN ML16160A045

\*Concurrence via e-mail

<b>OFFICE</b>	NRR/JLD/JHMB/PM	NRR/JLD/JHMB	NRR/JLD/LA*	NRR/JLD/JHMB/BC (A)
<b>NAME</b>	JUriebe	EBowman	Slent	GBowman*
<b>DATE</b>	6/10/2016	6/10/16	6/10/16	6/20/2016
<b>OFFICE</b>	NRR/JLD/JOMB/BC (A)	NRR/JLD/JCBB/BC	NRR/JLD/JERB/BC	OGC (NLO)
<b>NAME</b>	MHalter*	JQuichoco*	SBailey*	AGendelman*
<b>DATE</b>	6/16/2016	6/14/2016	6/13/2016	6/21/2016
<b>OFFICE</b>	NRO/DSEA/D	NRR/JLD/D		
<b>NAME</b>	SFlanders*	JDavis (MShams for)*		
<b>DATE</b>	6/16/2016	6/21/2016		

**OFFICIAL RECORD COPY**

**INTERIM STAFF GUIDANCE  
JAPAN LESSONS-LEARNED DIVISION  
GUIDANCE FOR ACTIVITIES RELATED TO NEAR-TERM TASK FORCE  
RECOMMENDATION 2.1, FLOODING HAZARD REEVALUATION;  
FOCUSED EVALUATION AND INTEGRATED ASSESSMENT  
JLD-ISG-2016-01**

**PURPOSE**

This interim staff guidance (ISG) is being issued to describe to stakeholders methods acceptable to the staff of the U.S. Nuclear Regulatory Commission (NRC) for satisfying the requested integrated assessment for external flooding described in the NRC's March 12, 2012, request for information (Reference 1), issued pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR), Section 50.54, "Conditions of Licenses," (hereafter referred to as the 50.54(f) letter) regarding Recommendation 2.1 of the enclosure to SECY-11-0093, "Recommendations for Enhancing Reactor Safety in the 21<sup>st</sup> Century, the Near-Term Task Force Review of Insights from the Fukushima Dai-ichi Accident" (Reference 2), as modified by COMSECY-14-0037, "Integration of Mitigating Strategies for Beyond-Design-Basis External Events and the Reevaluation of Flooding Hazards," (Reference 3), its related staff requirements memorandum (SRM) (Reference 4), COMSECY-15-0019, "Closure Plan for the Reevaluation of Flooding Hazards for Operating Nuclear Power Plants," (Reference 5) and its associated SRM (Reference 5). Among other actions, the March 12, 2012, letter requested that respondents reevaluate flood hazards at each site and compare the reevaluated hazard to the design-basis at the site for each flood mechanism. Addressees were requested to perform an integrated assessment if the design-basis flood hazard does not bound the reevaluated flood hazard for all mechanisms.

This ISG will assist operating power reactor respondents and holders of construction permits under 10 CFR Part 50, "Domestic Licensing of Production and Utilization Facilities," with performance of the focused evaluations and revised integrated assessments. This guidance is not intended for use in design-basis applications or in regulatory activities beyond the scope of performing the integrated assessment.

**BACKGROUND**

Following the events at the Fukushima Dai-ichi nuclear power plant, the NRC established a senior-level agency task force referred to as the Near-Term Task Force (NTTF). The NTTF conducted a systematic and methodical review of the NRC regulations and processes and determined if the agency should make additional improvements to these programs in light of the events at Fukushima Dai-ichi. As a result of this review, the NTTF developed a comprehensive set of recommendations, documented in the enclosure to SECY-11-0093 (Reference 2). These recommendations were enhanced by the NRC staff following interactions with stakeholders. Documentation of the NRC staff's efforts is contained in SECY-11-0124, "Recommended Actions To Be Taken without Delay from the Near-Term Task Force Report," dated September 9, 2011 (Reference 7), and SECY-11-0137, "Prioritization of Recommended Actions To Be Taken in Response to Fukushima Lessons Learned," dated October 3, 2011 (Reference 8).

As directed by the SRM for the enclosure to SECY-11-0093 (Reference 9), the NRC staff reviewed the NTTF recommendations within the context of the NRC's existing regulatory framework and considered the various regulatory vehicles available to the NRC to implement the recommendations. SECY-11-0124 and SECY-11-0137 established the staff's prioritization of the recommendations based upon the potential safety enhancements.

As part of the SRM for SECY-11-0124, dated October 18, 2011 (Reference 10), the Commission approved the staff's proposed actions, including the development of three information requests under 10 CFR 50.54(f). The information collected would be used to support the NRC staff's evaluation of whether available or planned measures provide effective protection and mitigation or if further regulatory action should be pursued in the areas of seismic and flooding design, and emergency preparedness.

In addition to Commission direction, the Consolidated Appropriations Act, Public Law 112-074, was signed into law on December 23, 2011, which contains the Energy and Water Development Appropriations Act, 2012. Section 402 of the law requires a reevaluation of licensees' design-basis for external hazards. In response to Commission and Congressional direction, the NRC issued a request for information to all power reactor licensees and holders of construction permits under 10 CFR Part 50 on March 12, 2012 (Reference 1).

In SRM COMSECY-15-0019, the Commission approved the staff's plans to implement a graded approach for determining the need for, and prioritization and scope of, plant-specific integrated assessments so that they are focused on those plants where there is the greatest opportunity for additional safety enhancements. As discussed in COMSECY-15-0019, the majority of sites with flooding hazards exceeding the design-basis flood will screen out from the integrated assessments and licensees will instead provide focused evaluations to ensure appropriate actions are taken and that these actions are effective and reasonable.

The NRC held a series of public meetings to gather stakeholder input as an aid to developing the guidance for this approach. On March 9, 2016, the Nuclear Energy Institute (NEI) submitted NEI 16-05, Revision A, "External Flooding Assessment Guidelines," (Reference 11) in support of this effort. The NEI subsequently submitted NEI 16-05, Revision B (Reference 12) to support further discussion in a public meeting on April 8, 2016. The NEI submitted an updated version of NEI 16-05 on April 12, 2016. On April 22, 2016, the NRC issued a draft version of this ISG (Reference 18) and published a notice of its availability for public comment in the *Federal Register* (April 22, 2016, 81 FR 23758), with the comment period running through May 23, 2016. The staff received 1 comment submittal during this time and a late submittal containing 1 additional comment. The staff addressed the comments, as documented in "NRC Response to Public Comments, JLD-ISG-2016-01 (Docket ID NRC-2016-0084)" (Reference 19).

On June 10, 2016, NEI submitted Revision 1 to NEI 16-05, incorporating many of the clarifications and additions included in the draft version of this ISG (Reference 18). This ISG endorses NEI 16-05, Revision 1 (Reference 20), with clarifications as described in the attachment.

## **RATIONALE**

1. On March 12, 2012, the NRC issued a request for information to all power reactor licensees and holders of construction permits under 10 CFR Part 50. The request was issued in accordance with the provisions of Sections 161.c, 103.b, and 182.a of the Atomic Energy Act of 1954, as amended (the Act), and NRC regulation in 10 CFR, Part 50, Paragraph 50.54(f). Pursuant to these provisions of the Act or this regulation, respondents were required to provide information to enable the staff to determine whether a nuclear plant license should be modified, suspended, or revoked. The request for information includes a request that respondents reevaluate flooding hazards at nuclear power plant sites using updated flooding hazard information and present-day regulatory guidance and methodologies. The 50.54(f) letter also requests the comparison of the reevaluated hazard to the design-basis at the site for each potential flood mechanism. If the reevaluated flood hazard at a site is not bounded by the current design-basis, respondents were requested to perform an integrated assessment to evaluate the total plant response to the flood hazard, considering multiple and diverse capabilities such as physical barriers, temporary protective measures, and operational procedures.
2. As described in COMSECY-15-0019, a focused evaluation process will be used by the NRC staff to screen out licensees from need for an integrated assessment based on a graded, risk-informed, and performance-based approach. COMSECY-15-0019 and the related SRM informed the development of guidance in NEI 16-05 and the screening process for improving realism in the flooding hazards and addressing focused evaluations for plants with available physical margin and plants affected by local intense precipitation (LIP). As described in COMSECY-15-0019, Phase 2 decisionmaking will only be applicable to plants performing a revised integrated assessment because licensees for “screened-out” sites will address the reevaluated flooding hazards through existing capabilities or regulatory commitments associated with enhanced capabilities.

## **APPLICABILITY**

This ISG will be implemented on the day following its approval. It will remain in effect until it has been superseded or withdrawn.

## **PROPOSED GUIDANCE**

This ISG is applicable to holders of operating power reactor licenses from whom an integrated assessment is requested in the March 12, 2012, request for information (i.e., sites for which the current design-basis flood hazard does not bound the reevaluated hazard for all potential flood mechanisms).

## **IMPLEMENTATION**

Except in those cases in which a licensee proposes an acceptable alternative method for performing the integrated assessment, the NRC staff will use the methods described in this ISG to evaluate the results of the integrated assessment.

## **BACKFITTING DISCUSSION**

This ISG does not constitute backfitting as defined in 10 CFR 50.109 (the Backfit Rule) and is not otherwise inconsistent with the issue finality provision in 10 CFR Part 52, "Licenses, Certifications, and Approvals for Nuclear Power Plants," of 10 CFR. This ISG provides guidance on an acceptable method for responding to a portion of an information request issued pursuant to 10 CFR 50.54(f). Neither the information request nor the ISG requires the modification or addition to systems, structures, or components, or design of a facility. Licensees may voluntarily use the guidance in JLD-ISG-2016-01 to comply with the request for information.

The information received in response to this information request may be used in the basis for a backfit at a later date. In that case, the appropriate backfit review process would be followed at that time.

## **FINAL RESOLUTION**

The contents of this ISG, or a portion thereof, may subsequently be incorporated into other guidance documents, as appropriate.

## **ENCLOSURE:**

1. Guidance for Activities Related to Near-Term Task Force Recommendation 2.1, Flooding Hazard Reevaluation; Focused Evaluation and Integrated Assessment.

## REFERENCES

1. U.S. Nuclear Regulatory Commission, Request for Information Pursuant to Title 10 of the Code of Federal Regulations 50.54(f) Regarding Recommendations 2.1, 2.3, and 9.3, of the Near-Term Task Force Review of Insights from the Fukushima Dai-ichi Accident, March 12, 2012, Agencywide Documents Access and Management System (ADAMS) Accession No. ML12053A340.
2. U.S. Nuclear Regulatory Commission, "Recommendations for Enhancing Reactor Safety in the 21st Century, The Near-Term Task Force Review of Insights from the Fukushima Dai-ichi Accident," Enclosure to SECY-11-0093, July 12, 2011, ADAMS Accession No. ML111861807.
3. U.S. Nuclear Regulatory Commission, "Integration of Mitigating Strategies for Beyond-Design-Basis External Events and the Reevaluation of Flooding Hazards," COMSECY-14-0037, November 21, 2014, ADAMS Accession No. ML14238A616.
4. U.S. Nuclear Regulatory Commission, "Staff Requirements – COMSECY-14-0037 - Integration of Mitigating Strategies for Beyond-Design-Basis External Events and the Reevaluation of Flooding Hazards," SRM-COMSECY-14-0037, March 30, 2015, ADAMS Accession No. ML15089A236.
5. U.S. Nuclear Regulatory Commission, "Closure Plan for the Reevaluation of Flooding Hazards for Operating Nuclear Power Plants," COMSECY-15-0019, June 30, 2015, ADAMS Accession No. ML15153A105.
6. U.S. Nuclear Regulatory Commission, "Staff Requirements – COMSECY 15-0019 - Closure Plan for the Reevaluation of Flooding Hazards for Operating Nuclear Power Plants," SRM-COMSECY-15-0019, ADAMS Accession No. ML15209A682.
7. U.S. Nuclear Regulatory Commission, "Recommended Actions To Be Taken without Delay from the Near Term Task Force Report," SECY-11-0124, September 9, 2011, ADAMS Accession No. ML11245A158.
8. U.S. Nuclear Regulatory Commission, "Prioritization of Recommended Actions To Be Taken in Response to Fukushima Lessons Learned," SECY-11-0137, October 3, 2011, ADAMS Accession No. ML11272A111.
9. U.S. Nuclear Regulatory Commission, "Staff Requirements - SECY-11-0093 - Near-Term Report and Recommendations for Agency Actions following the Events in Japan," August 19, 2011, ADAMS Accession No. ML112310021.
10. U.S. Nuclear Regulatory Commission, "Staff Requirements - SECY-11-0124 - Recommended Actions To Be Taken without Delay from the Near-Term Task Force Report, October 18, 2011, ADAMS Accession No. ML112911571.
11. Nuclear Energy Institute, NEI 16-05, Revision A, "External Flooding Assessment Guidelines," June 2016 (sic), ADAMS Accession No. ML16074A263.

12. Nuclear Energy Institute, NEI 16-05, Revision B, "External Flooding Assessment Guidelines," April 2016, ADAMS Accession No. ML16104A019.
13. Nuclear Energy Institute, NEI 16-05, Revision 0, "External Flooding Integrated Assessment Guidelines," April 2016, ADAMS Accession No. ML16105A327.
14. U.S. Nuclear Regulatory Commission, Directive Handbook 8.4, "Management of Facility-Specific Backfitting and Information Collection," DH 8.4, October 9, 2013, ADAMS Accession No. ML12059A460.
15. U.S. Nuclear Regulatory Commission, "Regulatory Analysis Guidelines of the U.S. Nuclear Regulatory Commission," NUREG/BR-0058, Revision 4, September 2004.
16. U.S. Nuclear Regulatory Commission, "Regulatory Analysis Technical Handbook," NUREG/BR-0184, January 1997.
17. U.S. Nuclear Regulatory Commission, "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants: LWR Edition," Section 2.4.2, "Floods," Rev. 4, March 2007.
18. U.S. Nuclear Regulatory Commission, "Draft JLD-ISG-2016-01 Guidance for Activities Related to Near-Term Task Force Recommendation 2.1, Flooding Hazard Reevaluation; Focused Evaluation and Integrated Assessment, Revision 0," April 15, 2016, ADAMS Accession No. ML16090A140.
19. U.S. Nuclear Regulatory Commission, "NRC Responses to Public Comments: Revision to Japan Lessons-Learned Division Interim Staff Guidance JLD-ISG-2016-01: Guidance for Activities Related to Near-Term Task Force Recommendation 2.1, Flooding Hazard Reevaluation; Focused Evaluation and Integrated Assessment," June 21, 2016, ADAMS Accession No. ML16165A103.
20. Nuclear Energy Institute, NEI 16-05, Revision 1, "External Flooding Assessment Guidelines," June 10, 2016, ADAMS Accession No. ML16165A176.



**INTERIM STAFF GUIDANCE  
JAPAN LESSONS-LEARNED DIVISION  
GUIDANCE FOR ACTIVITIES RELATED TO NEAR-TERM TASK FORCE  
RECOMMENDATION 2.1, FLOODING HAZARD REEVALUATION;  
FOCUSED EVALUATION AND INTEGRATED ASSESSMENT  
JLD-ISG-2016-01**

## **1. Introduction**

This interim staff guidance (ISG) provides guidance for the Nuclear Regulatory Commission (NRC) staff review of focused evaluations submitted in response to the NRC's March 12, 2012, request for information regarding flooding hazards. The request was issued pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR), Section 50.54(f) (hereafter referred to as the 50.54(f) letter). This ISG endorses, with clarifications, the approach proposed by the Nuclear Energy Institute (NEI) in NEI 16-05, Revision 1, "External Flooding Integrated Assessment Guidelines," (Agencywide Documents Access and Management System (ADAMS) Accession No. ML16165A176).

Staff Position: NEI 16-05 provides an acceptable methodology for licensees to perform focused evaluations and integrated assessments of flood mechanisms that exceed the design-basis flood parameters for a facility, subject to the clarifications related to specific sections of NEI 16-05. Licensees may use the methodology of NEI 16-05, with clarifications, upon receipt of the NRC letter providing the flood hazard parameters for use in the Mitigating Strategies Assessments of NEI 12-06, Appendix G. The NRC letter providing the flood hazard parameters for use in the mitigating strategies assessment provides the information needed for licensees to perform focused evaluations or integrated assessments.

## **2. Initial Evaluation Process – Reduction of Unnecessary Conservatism**

Section 6.1 of NEI 16-05 discusses concepts a licensee may use as part of an iterative process under the NUREG/CR-7046 hierarchical hazard assessment approach in order to reduce conservatisms inherent in the reevaluation of flooding hazards. Appendix A of NEI 16-05 provides a catalog of select assumptions, inputs, and methods that may introduce conservatisms in the results.

Staff Position: As discussed in NEI 16-05, Section 6.1, licensees seeking to reduce unnecessary conservatisms in the reevaluation of flooding hazards submitted in response to the 50.54(f) letter may do so by refinement of the estimation of their site-specific hazard using the hierarchical hazard assessment (HHA) process of NUREG/CR-7046, as described in the 50.54(f) letter. The output of this process would be a refined, yet still bounding flood hazard. As described in Appendix A, Section A.3, licensees should provide a sound basis for refinements, "demonstrat[e] that reductions are more realistic yet still bounding" and "[err] on the side of conservative [as] the acceptance standard." Appendix A, Tables A-1 and

---

Enclosure

A-2 provide considerations for licensees in identifying potential refinements but, due to the site-specific nature of flooding evaluations, the tables are not endorsed as guidance for evaluation of flood hazards.

For local intense precipitation (LIP), the NRC staff review of a licensee's proposed reduction of conservatism should consider whether the refinements have been justified by regulatory commitments to implement or maintain procedures or programs."

The NRC staff will review hazard reevaluation on a site-specific basis to ensure the hazard refinements are consistent with present-day methods and guidance, including the HHA process.

### **3. Initial Evaluation of Flood Impacts and Protection**

Section 6.3.1 of NEI 16-05 provides a method for evaluating the potential impact of flooding under the reevaluated flood parameters on plant conditions. This method includes the identification of key structures, systems and components (SSCs), flood protection features, and critical flood elevations that could impact the key SSCs.

Staff Position: NEI 16-05, Section 6.3.1 provides an acceptable method for evaluating the potential impact of flooding under the reevaluated flood parameters on plant conditions.

#### **3.1 Determination of Available Physical Margin**

Section 6.3.2 and Appendix B of NEI 16-05 provide a method for determining available physical margin (APM) for passive (including temporary) or active flood protection features.

Staff Position: Section 6.3.2 and Appendix B of NEI 16-05 provide an acceptable method for determining APM subject to the following clarifications:

1. Consequential flood(ing) conditions represent the least severe flood conditions that could adversely affect a Key SSC and lead to loss of a key safety function (KSF), including considerations for flood level, flood event duration and associated effects. Consequential flood conditions may typically focus on the critical flood elevation; however associated effects and flood event duration may also have adverse impacts and should be accounted for in the determination of consequential flood conditions.
2. Section B.2.1.5 to NEI 16-05 relies on the guidance of NEI 12-07, "Guidelines for Performing Verification Walkdowns of Plant Flood Protection Features," and consideration of NRC letter, "Request for Additional Information [RAI] Associated with Near Term Task Force Recommendation 2.3, Flooding Walkdowns," dated December 23, 2013 (ADAMS Accession No. ML13325A891) for the evaluation of adequacy of plugs and penetration seals. Licensees should apply both the guidance in NEI 12-07 and the RAI in evaluation of seals. In applying both documents, licensees should use the reevaluated flooding parameters rather than the current licensing basis flood height.

#### **4. Focused Evaluation Process (Paths 1-3)**

Section 7 of NEI 16-05 provides the process for licensees to use in conducting focused evaluations of the various flooding mechanisms.

##### **4.1 Path 1: Demonstrate Flood Mechanism is Bounded (Box 2a-2b-2c)**

Section 7.1 of NEI 16-05 provides a process for licensees to disposition flood mechanisms for which the flooding parameters are bounded by the design-basis flooding parameters of the facility.

Staff Position: Section 7.1 of NEI 16-05 provides an acceptable method for dispositioning flood mechanisms with flooding parameters bounded by the design-basis flooding parameters of the facility.

##### **4.2 Path 2: Demonstrate Effective Flood Protection (Box 5-6)**

Section 7.2 and Appendix B of NEI 16-05 provide a process for licensees to disposition flood mechanisms for which the facility's flood protection is effective. The process of Section 7.2 builds upon that of Section 6.3.2, but may be based on a refined hazard as developed under NEI 16-05, Section 6.1 and staff position in Section 2 of Enclosure 1 of this ISG.

Appendix C of NEI 16-05 provides a method for assessing the manual actions necessary for reliance on the flood protection features where appropriate.

##### Staff Positions:

1. Section 7.2 and Appendix B of NEI 16-05 provide an acceptable method for evaluating the effectiveness of flood protection.
2. Appendix C to NEI 16-05 provides an acceptable method for evaluation of the site response. The NRC staff reviewing the operator actions associated with flood protection using Appendix C to NEI 16-05 should exercise engineering and operational judgment in assessing the site response.

##### **4.3 Path 3: Demonstrate a Feasible Response to Local Intense Precipitation (Box 7-8)**

Section 7.3 of NEI 16-05 provides a process for licensees to disposition instances where the LIP flood mechanism is not bounded by the design-basis flooding parameters of the facility.

Staff Position: As discussed in COMSECY-15-0019:

licensees [with LIP hazards exceeding their current design-basis flood should] assess the impact of the LIP hazard on their sites and then evaluate

and implement any necessary programmatic, procedural or plant modifications to address this hazard exceedance. This assessment includes evaluation and justification for: crediting systems that were assumed clogged during the hazard reevaluations; and considering available warning time and flood protection measures, both permanent and temporary, as well as associated manual actions.

Licensees may use the process described in the NEI White Paper, "Warning Time for Maximum Precipitation Events," dated April 8, 2015 (ADAMS Accession No. ML15104A157), and the related NRC letter dated April 23, 2015 (ADAMS Accession No. ML15110A080), in order to take advantage of warning time for LIP.

Section 7.3 of NEI 16-05 provides an acceptable approach to implement the principles discussed in COMSECY-15-0019 for dispositioning LIP hazards that are not bounded by the design basis flooding parameters of a facility subject to the following clarification:

- a. Licensees should assess protection of key SSCs as defined in NEI 16-05 with the considerations described in Section 4.2. Protection should include considerations described in NEI 16-05, Appendix B. If it is not practical to protect key SSCs from the LIP hazards, licensees should attempt to mitigate the impact of the LIP on key SSCs. Demonstration of mitigation capability could include reliance on the mitigating strategies assessment for LIP.

The NRC staff reviewing the plant response evaluation for LIP should apply engineering and operational judgment in assessing the site response.

## **5. Full Scope Integrated Assessment Process (Paths 4-5)**

Section 8 of NEI 16-05 provides the process for licensees to use in conducting revised integrated assessments of the various flooding mechanisms.

### **5.1 Path 4: Demonstrate Effective Mitigation (Box 9-10)**

Section 8.1 of NEI 16-05 provides one process for licensees to perform a revised integrated assessment of flood mechanisms that are not bounded by the design-basis flood hazard of a facility.

Appendix C of NEI 16-05 provides a method for assessing the manual actions necessary for flood mitigation or reliance on the flood protection features where appropriate.

Appendix D of NEI 16-05 provides resources for estimating frequencies of exceedance for flooding mechanisms in the  $10^{-3}$ /year to  $10^{-4}$ /year range.

Staff Position: NEI 16-05, Section 8.1, and Appendix C provide an acceptable method to perform a revised integrated assessment subject to the following clarifications:

1. In NEI 16-05, Appendix C provides an acceptable method for evaluation of the site response. NRC staff reviewing the operator actions associated with Path 4 using Appendix C to NEI 16-05 should exercise engineering and operational judgment in assessing the site response.
2. In NEI 16-05, Appendix D provides available methods for estimating frequencies greater than  $10^{-4}$ /year. When applying these methods, the licensees should consider the following clarifications:
  - a. Appendix D, Section D.2, compiles selected methods and references related to developing a probabilistic characterization of flooding hazards that have been used primarily in applications not related to nuclear power plants. When applying methods and references provided in Section D.2, licensees should assess the methods and references to:
    - Verify that that references have not been superseded or rescinded due to identified technical inadequacies or shortcomings. Limitations on rescinded references do not apply to documents that have been administratively withdrawn for reasons not related to technical adequacy (e.g., due to administrative schedules associated with Standards).
    - Ensure context and caveats from the source documents related to the numerical values in Table D-1 (as described in USBR, 2004) and Figure D-1 as well as the methods and references described in Table D-2 are addressed.

The NRC staff will review licensee evaluations on a case-by-case basis to ensure references and methods are applied appropriately and that evaluations have suitable attributes, including consideration of uncertainties, consistent with Section D.1 of NEI 16-05.

## **5.2 Path 5: Scenario Based Approach (Box 11-12)**

Section 8.2 of NEI 16-05 provides another process for licensees to perform a revised integrated assessment of flood mechanisms that are not bounded by the design-basis flood hazard of a facility.

Appendix C of NEI 16-05 provides a method for assessing the manual actions necessary for flood mitigation or reliance on the flood protection features where appropriate.

Appendix D of NEI 16-05 provides resources for estimating frequencies of exceedance for flooding mechanisms in the  $10^{-3}$ /year to  $10^{-4}$ /year range.

Staff Position: NEI 16-05, Section 8.1, and Appendix C provide an acceptable method to perform a revised integrated assessment subject to the following clarifications:

1. In NEI 16-05, Appendix C provides an acceptable method for evaluation of the site response. NRC staff reviewing the operator actions associated with Path 5 using

Appendix C to NEI 16-05 should exercise engineering and operational judgment in assessing the site response.

2. In NEI 16-05, Appendix D provides available methods for estimating frequencies greater than  $10^{-4}$ /year. When applying these methods the licensees should consider the attributes described in Enclosure 2 of this ISG along with the following clarifications:
  - a. Appendix D, Section D.2, compiles selected methods and references related to developing a probabilistic characterization of flooding hazards that have been used primarily in applications not related to nuclear power plants. When applying methods and references provided in Section D.2, licensees should assess the methods and references to:
    - Verify that that references have not been superseded or rescinded due to identified technical inadequacies or shortcomings. Limitations on rescinded references do not apply to documents that have been administratively withdrawn for reasons not related to technical adequacy (e.g., due to administrative schedules associated with Standards).
    - Ensure context and caveats from the source documents related to the numerical values in Table D-1 (as described in USBR, 2004) and Figure D-1, as well as the methods and references described in Table D-2 are addressed.

The NRC staff will review licensee evaluations on a case-by-case basis to ensure references and methods are applied appropriately and that evaluations have suitable attributes, including consideration of uncertainties, consistent with Section D.1 of NEI 16-05.