



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D.C. 20555-0001

September 1, 2015

The Power Reactor Licensees  
on the Enclosed List

SUBJECT: COORDINATION OF REQUESTS FOR INFORMATION REGARDING  
FLOODING HAZARD REEVALUATIONS AND MITIGATING STRATEGIES FOR  
BEYOND-DESIGN-BASIS EXTERNAL EVENTS

The purpose of this letter is to describe changes in the U. S. Nuclear Regulatory Commission's (NRC's) approach to flood hazard reevaluations, including their use in evaluating mitigating strategies for beyond-design-basis external events, and the expected interactions and additional information needed from licensees to complete these activities. The NRC staff is implementing a plan for completing and closing actions for flood hazard reevaluations associated with Recommendation 2.1 from the agency's post-Fukushima Near-Term Task Force (NTTF). Because the staff sought additional clarification from the Commission, by letter dated May 26, 2015 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML15112A051), the NRC deferred the due date for licensees to respond to the request for integrated assessment reports described in the request for information dated March 12, 2012, issued pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50, Section 50.54(f) (hereafter referred to as the 50.54(f) letter) (ADAMS Accession No. ML12053A340).

The reevaluation of flood hazards supports the development and implementation of mitigating strategies for beyond-design-basis events. The coordination of flood hazard reevaluations and mitigating strategies has been discussed in numerous public meetings and within draft guidance being prepared by the NRC staff and the Nuclear Energy Institute (NEI). Additional direction on the scope and schedule for information being requested on the flood hazard reevaluations and assessments of mitigating strategies will be provided upon completion of the related guidance documents. This additional guidance is anticipated to be available in Fall 2015.

BACKGROUND

Licensees for operating nuclear reactors have submitted or are currently preparing the information requested in the 50.54(f) letter. The flood hazard reevaluations apply present-day guidance and methods to calculate postulated, conservative flooding hazards. This information supports assessing the potential impact of such flooding events on the sites. Integrated assessments were originally requested for those plants with calculated values exceeding their design-basis flood to help identify plant vulnerabilities, potential plant improvements, and to support the evaluation of possible regulatory actions in response to the flooding reevaluations prepared in response to the 50.54(f) letter. Concurrent with the reevaluation of flood hazards, licensees were required to develop and implement mitigating strategies using the most recent external hazard information in accordance with NRC Order EA-12-049, "Requirements for Mitigation Strategies for Beyond-Design-Basis External Events" (ADAMS Accession No. ML12054A735).

The NRC staff and industry have long recognized the difficulty in developing and implementing mitigating strategies before completing the reevaluation of flood hazards. The staff described these issues and provided recommendations to the Commission on how best to integrate these related activities in COMSECY-14-0037, "Integration of Mitigating Strategies for Beyond-Design-Basis External Events and the Reevaluation of Flooding Hazards," dated November 21, 2014 (ADAMS Accession No. ML14309A256). The Commission issued a Staff Requirements Memorandum (SRM) on March 30, 2015 (ADAMS Accession No. ML15089A236), affirming that the Commission expected licensees for operating nuclear power plants to address the reevaluated flooding hazards within their mitigating strategies for beyond-design-basis external events and directing the NRC staff to develop a plan for revising guidance and developing criteria for appropriately assessing the reevaluated flooding hazards.

The NRC staff has, as directed by the Commission, revised the original regulatory approach and developed a graded approach for determining the need for, and scope of, plant-specific integrated assessments such that the agency's focus is commensurate with the safety significance of the reevaluated flooding hazards. The NRC staff is continuing to work with licensees, through NEI, to develop additional guidance needed for reevaluating flooding hazards and assessing mitigating strategies under this revised approach. The primary elements of the revised integrated plan for mitigating strategies and Recommendation 2.1 are described below. Specific guidance on the content and schedule for the various assessments and submittals will be provided in future correspondence

#### Mitigating Strategies

- The implementation of mitigating strategies as required under Order EA-12-049 should continue as described in licensees' overall integrated plans. These plans and the related NRC safety evaluations and inspections will rely on the guidance provided in Revision 0 of NRC Japan Lessons-Learned Division (JLD) interim staff guidance (ISG) JLD-ISG-2012-01, "Compliance with Order EA-12-049, Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events" (ADAMS Accession No. ML12229A174) and the related industry guidance in Revision 0 to NEI 12-06, "Diverse and Flexible Coping Strategies (FLEX) Implementation Guide" (ADAMS Accession No. ML12242A378). Licensees should be mindful that the Mitigation of Beyond-Design-Basis Events (MBDBE) rulemaking will reflect the Commission decision that mitigating strategies need to address the reevaluated flood hazards. The reevaluations may also identify issues to be entered into corrective action programs consistent with the overall integrated plans submitted in accordance with Order EA-12-049.
- The NRC staff will interact with licensees to define the reevaluated flood hazards to use in assessing mitigating strategies and in determining what, if any, actions or additional assessments are needed to address NTF Recommendation 2.1. The reviews performed to date, along with audits and requests for additional information, will be used to define the flooding information against which mitigating strategies should be evaluated (referred to as mitigating strategies flood hazard information (MSFHI) in proposed guidance contained in draft Appendix G to Revision 1 of NEI 12-06). Licensees may need to supplement previous responses to the 50.54(f) letter to reflect the ongoing interactions and to support the NRC staff in issuing letters confirming what constitutes the reevaluated flooding hazards for most sites by December 2015. These letters will be issued upon completion of the NRC staff's review and will document NRC's approval of licensees' flooding hazard reevaluations for use in assessing mitigating strategies. Defining the reevaluated flood hazards for some

sites may not occur until 2016 due to ongoing analyses by licensees or supporting Federal agencies. Enclosure 2 to this letter lists the NRC staff's current estimates for completing the reviews and issuing of MSFHI letters for each site. The NRC staff will issue the letters as they are completed and expects most of the letters to be issued during or before the months listed in the enclosed tables. The tables are based on the status of the ongoing reviews, and the schedule for a specific site is subject to change depending on the progress of the review. Changes to the estimated dates for the MSFHI letters could result from issues requiring substantive changes to the flood hazard reevaluation report (FHRR) or issues identified from requests for additional information or during plant audits. Questions or concerns related to the MSFHI letters or related schedules should be directed to the project manager listed in the enclosure.

- Guidance for conducting an assessment of mitigating strategies against the reevaluated flood hazards is being prepared and is expected to be issued by December 2015. Current activities include the industry's preparation and NRC review of Appendix G to NEI 12-06. The NRC staff plans to include its endorsement, with possible exceptions and clarifications, in the regulatory guidance for the MBDBE rulemaking (draft regulatory guide DG-1301, "Flexible Mitigation Strategies for Beyond-Design-Basis Events") and in a revision to JLD-ISG-2012-01. In addition to addressing reevaluated flooding hazards for the MBDBE rulemaking, the guidance can also be used to address the corrective actions for reevaluated external hazards identified in the overall integrated plans for Order EA-12-049.
- For most sites, the establishment of the MSFHI and issuance of guidance should support licensees assessing and, as necessary, revising mitigating strategies in 2016 to address reevaluated flood hazards. The assessments and changes to mitigating strategies (including the possible development of alternate or targeted strategies) are intended to minimize future changes associated with the implementation of the MBDBE rulemaking, support timely corrective actions for issues related to the reevaluated hazards as called for in the overall integrated plans for Order EA-12-049, and meet the goals of the NRC and industry to make timely safety enhancements to address lessons learned from the Fukushima Dai-ichi accident.
- For some sites, the relationship between mitigating strategies and the reevaluation of flooding hazards will likely result in an additional submittal of information by licensees in late 2016, describing the mitigating strategies assessment, the outcome in terms adequacy of or changes to FLEX or the development of alternate or targeted strategies, and the status of or plans to implement identified corrective actions. In all cases, the mitigating strategies assessments and implementation of identified changes will be needed for the pending MBDBE rulemaking.

#### Flood Hazard Reevaluations and Integrated Assessments

- The establishment of the flood hazard information for assessing mitigating strategies also allows licensees to begin the evaluations needed to close out NTTF Recommendation 2.1. The NRC staff is preparing guidance to replace the instructions provided in the December 3, 2012, letter "Trigger Conditions for Performing an Integrated Assessment and Due Date for Response" (ADAMS Accession No. ML12326A912). The guidance will discuss a graded approach to flooding reevaluations and provide for more focused evaluations of local intense precipitation and available physical margin in lieu of proceeding to an

integrated assessment. The guidance describing this screening process and clarification of the guidance for performing revised integrated assessments to reflect lessons learned and the Commission's SRM on COMSECY-14-0037 is expected to be issued by mid-2016.

- Issuance of the reevaluated flood hazard information and guidance for the more focused evaluations of local intense precipitation and available physical margin by mid-2016 will support licensees in performing these evaluations by mid-2017 and either confirming that existing or enhanced plant features and procedures address local intense precipitation and that physical protection is available for other flooding mechanisms, or that performing a revised integrated assessment is appropriate for the affected plant. For plants screening out of the integrated assessment, the guidance will describe the summary-level documentation to be submitted by licensees to support closure of NTTF Recommendation 2.1 for flooding. Where additional measures are necessary to protect against a flooding mechanism, licensees may include in their submittals regulatory commitments to implement procedural or hardware changes. The NRC staff will document the closure of the activity for each site in letters to the licensees. In the longer-term, the NRC staff will confirm the implementation and maintenance of modifications and supporting documentation through inspections or audits (e.g., Inspection Procedure 71111.01, "Adverse Weather Protection").
- A limited number of sites are expected to require a revised integrated assessment of flooding hazards. Guidance for performing a revised integrated assessment is expected to be issued in 2016. The guidance for revised integrated assessments will continue to allow licensees to use those mitigating strategies that are protected from the reevaluated hazard. The process will continue to focus on potential cliff-edge effects and will afford licensees the option to demonstrate that vulnerabilities identified may be less risk significant when more realistic assumptions are applied in the analyses. The revised integrated assessments will provide information about the flooding hazard and plant response (including existing, new, or proposed capabilities) yielding important quantitative and qualitative risk insights that licensees and the NRC staff will use to support safety and regulatory decisions (referred to as Phase 2 in the 50.54(f) letter). Factors that will be considered may include available warning time to help define the plant mode and needed cooling capabilities, risk reduction measures taken by the licensee, and protective actions (e.g., evacuations) to limit possible health consequences of the identified flooding scenarios at the subject site. The NRC staff will review the results of the integrated assessment to determine if licensees can address identified plant vulnerabilities appropriately or if a plant-specific backfit evaluation of potential regulatory actions should be undertaken in accordance with established processes such as NRC Management Directive 8.4, "Management of Facility-specific Backfitting and Information Collection." The integrated assessments are expected to be completed by December 2018.

More specific guidance and schedules will be provided in future letters as the guidance is issued and the related tasks become better defined.

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If you have any questions on this matter, please contact Mr. Victor Hall at 301-415-2915 or [Victor.Hall@nrc.gov](mailto:Victor.Hall@nrc.gov).

Sincerely,

A handwritten signature in black ink, appearing to read 'W. M. Dean', with a long horizontal flourish extending to the right.

William M. Dean, Director  
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Enclosures:

1. Addressee List
2. Finalization of Mitigating Strategies  
Flood Hazard Information

cc: Listserv

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South Carolina Electric and Gas Company  
Virgil C. Summer Nuclear Station  
Post Office Box 88, Mail Code 800  
Jenkinsville, SC 29065

Vogtle Electric Generating Plant  
Southern Nuclear Operating Co., Inc.  
Docket Nos. 50-424 and 50-425  
License Nos. NPF-68 and NPF-81

Mr. C.R. Pierce  
Regulatory Affairs Director  
Southern Nuclear Operating Co., Inc.  
P.O. Box 1295/Bin 038  
Birmingham, AL 35201-1295

Waterford Steam Electric Station  
Entergy Operations, Inc.  
Docket No. 50-382  
License No. NPF-38

Vice President, Operations  
Entergy Operations, Inc.  
Waterford Steam Electric Station, Unit 3  
17265 River Road  
Killona, LA 70057-0751

Watts Bar Nuclear Plant  
Tennessee Valley Authority  
Docket Nos. 50-390 and 50-391  
License No. NPF-90

Mr. Joseph W. Shea  
Vice President, Nuclear Licensing  
Tennessee Valley Authority  
1101 Market Street, LP 3D-C  
Chattanooga, TN 37402-2801

Wolf Creek Generating Station  
Wolf Creek Nuclear Operating Corp.  
Docket No. 50-482  
License No. NPF-42

Mr. Adam C. Heflin  
President, Chief Executive Officer,  
and Chief Nuclear Officer  
Wolf Creek Nuclear Operating Corporation  
P.O. Box 411  
Burlington, KS 66839

Finalization of Mitigating Strategies Flood Hazard Information			
Site	Category	MSFHI Letter Issuance	NRC Project Manager for MSFHI and Recommendation 2.1 Review
Braidwood	2	September 2015	Victor Hall
Browns Ferry	3	September 2015	Juan Uribe
Byron	2	September 2015	Victor Hall
Catawba	2	September 2015	Juan Uribe
Clinton	2	September 2015	Victor Hall
Davis-Besse	2	September 2015	Anthony Minarik
FitzPatrick	3	September 2015	Victor Hall
Ginna	3	September 2015	Juan Uribe
Hope Creek	2	September 2015	Anthony Minarik
LaSalle	2	September 2015	Victor Hall
McGuire	2	September 2015	Juan Uribe
North Anna	1	September 2015	Victor Hall
Oconee	1	September 2015	Anthony Minarik
Oyster Creek	3	September 2015	Victor Hall
Palo Verde	2	September 2015	Anthony Minarik
River Bend	2	September 2015	Tekia Govan
Salem	2	September 2015	Anthony Minarik
Sequoyah	3	September 2015	Juan Uribe
St. Lucie	3	September 2015	Victor Hall
Watts Bar	3	September 2015	Juan Uribe

Finalization of Mitigating Strategies Flood Hazard Information

Letters related to the use of the flood hazard information for assessing mitigating strategies and addressing remaining open items will be issued for those plants (listed below) that have received an NRC staff assessment related to their flooding hazard reevaluation report.

Site	MSFHI Letter Issuance	NRC Project Manager for MSFHI and R2.1 Review
Callaway	October 2015	Victor Hall
Calvert Cliffs	October 2015	Juan Uribe
Dresden	October 2015	Juan Uribe
Fermi	October 2015	Victor Hall
Grand Gulf	October 2015	Victor Hall
Harris	October 2015	Juan Uribe
Nine Mile Point	October 2015	Juan Uribe
South Texas	October 2015	Victor Hall
Summer	October 2015	Victor Hall
Turkey Point	October 2015	Victor Hall
Vogtle	October 2015	Victor Hall

Finalization of Mitigating Strategies Flood Hazard Information			
Site	Category	MSFHI Letter Issuance	NRC Project Manager for MSFHI and R2.1 Review
Brunswick	3	December 2015	Victor Hall
Comanche Peak	1	December 2015	Victor Hall
Cooper	2	December 2015	Tekia Govan
DC Cook	3	December 2015	Juan Uribe
Diablo Canyon	3	December 2015	Anthony Minarik
Duane Arnold	2	December 2015	Anthony Minarik
Farley	2	December 2015	Juan Uribe
Ft. Calhoun	2	December 2015	Tekia Govan
Hatch	2	December 2015	Juan Uribe
Indian Point	1	December 2015	Anthony Minarik
Limerick	3	December 2015	Victor Hall
Millstone	3	December 2015	Victor Hall
Palisades	3	December 2015	Anthony Minarik
Peach Bottom	2	December 2015	Anthony Minarik
Perry	3	December 2015	Juan Uribe
Pilgrim	3	December 2015	Victor Hall
Point Beach	3	December 2015	Juan Uribe
Robinson	2	December 2016	Victor Hall
Quad City	1	December 2015	Victor Hall
Surry	3	December 2015	Victor Hall
Susquehanna	3	December 2015	Anthony Minarik
Three Mile Island	1	December 2015	Anthony Minarik
Waterford	3	December 2015	Victor Hall



Finalization of Mitigating Strategies Flood Hazard Information			
Site	Category	MSFHI Letter Issuance	NRC Project Manager for MSFHI and R2.1 Review
Arkansas	USACE Assistance Requested	Mid-2016	Anthony Minarik
Beaver Valley	USACE Assistance Requested	Mid-2016	Anthony Minarik
Columbia	USACE Assistance Requested	Mid-2016	Victor Hall
Monticello	USACE Assistance Requested	Mid-2016	Victor Hall
Prairie Island	USACE Assistance Requested	Mid-2016	Victor Hall
Seabrook	Extension Requested	Mid-2016	Victor Hall
Wolf Creek	Revised FHRR	Mid-2016	Anthony Minarik

If you have any questions on this matter, please contact Mr. Victor Hall at 301-415-2915 or [Victor.Hall@nrc.gov](mailto:Victor.Hall@nrc.gov).

Sincerely,

**/RA/**

William M. Dean, Director  
Office of Nuclear Reactor Regulation

Enclosures:

1. Addressee List
2. Finalization of Mitigating Strategies  
Flood Hazard Information

cc: Listserv

**DISTRIBUTION:** See next page

**ADAMS Accession No: ML15174A257**

**\*via email**

<b>OFFICE</b>	NRR/JLD/SA	NRR/JLD/JHMB*	NRR/JLD/LA	NRR/JLD/JHMB*
<b>NAME</b>	WReckley	VHall	SLent	MShams
<b>DATE</b>	06/24/15	07/07/15	06/24/15	07/13/15
<b>OFFICE</b>	OGC*	NRO/DSEA*	NRR/JLD/D	NRR/D
<b>NAME</b>	HBenowitz NLO	SFlanders	JDavis	WDean
<b>DATE</b>	07/16/15	07/29/15	08/20/15	09/01/15

**OFFICIAL RECORD COPY**

Letter to The Power Reactor Licensees on the Enclosed List from William M. Dean dated September 1, 2015

SUBJECT: COORDINATION OF REQUEST FOR INFORMATION REGARDING FLOODING  
HAZARD REEVALUATIONS AND MITIGATING STRATEGIES FOR  
BEYOND-DESIGN-BASIS EXTERNAL EVENTS

DISTRIBUTION:

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RidsNrrPMCAlvertCliffs

RidsNrrPMCatawba

RidsNrrPMClinton

RidsNrrPMColumbia

RidsNrrPMCooper

RidsNrrPMComanchePeak

RidsNrrPMDavisBesse

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RidsNrrPMHatch

RidsNrrPMHopeCreek

RidsNrrPMIndianPoint

RidsNrrPMLaSalle

RidsNrrPMLimerick

RidsNrrPMMcGuire

RidsNrrPMMillstone

RidsNrrMonticello

RidsNrrPMNineMilePoint

RidsNrrPMNorthAnna

RidsNrrPMOconee

RidsNrrPMOysterCreek

RidsNrrPMPalisades

RidsNrrPMPaloVerde

RidsNrrPM PeachBottom

RidsNrrPMPerry

RidsNrrPMPilgrim

RidsNrrPMPPointBeach

RidsNrrPMPrairieIsland

RidsNrrPMQuadCities

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RidsNrrPMSeabrook

RidsNrrPMSequoyah

RidsNrrPMShearonHarris

RidsNrrPMSouthTexas

RidsNrrPMSummer

RidsNrrPMSurry

RidsNrrPMStLucie

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