



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

December 23, 2015

Mr. Richard Michael Glover  
Site Vice President  
H.B. Robinson Steam Electric Plant  
Duke Energy  
3581 West Entrance Road, RNPA01  
Hartsville, SC 29550

SUBJECT: H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2 – INTERIM STAFF RESPONSE TO REEVALUATED FLOOD HAZARDS SUBMITTED IN RESPONSE TO 10 CFR 50.54(f) INFORMATION REQUEST – FLOOD-CAUSING MECHANISM REEVALUATION (TAC NO. MF3586)

Dear Mr. Glover:

The purpose of this letter is to provide a summary of the U.S. Nuclear Regulatory Commission (NRC) staff's assessment of the re-evaluated flood-causing mechanisms described in the March 12, 2014 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML14086A384), flood hazard reevaluation report (FHRR) submitted by Duke Energy Progress, Inc. (Duke, the licensee) for H. B. Robinson Steam Electric Plant, Unit No. 2 (Robinson), as well as the revised FHRR submitted by letter dated August 29, 2015 (ADAMS Accession No. ML15243A077), supplemental information resulting from requests for additional information and audits.

By letter dated March 12, 2012, the NRC issued a request for information pursuant to Title 10 of the *Code of Federal Regulations*, Section 50.54(f) (hereafter referred to as the 50.54(f) letter) (ADAMS Accession No. ML12053A340). The request was issued as part of implementing lessons-learned from the accident at the Fukushima Dai-ichi nuclear power plant. Enclosure 2 to the 50.54(f) letter requested licensees to re-evaluate flood-causing mechanisms using present-day methodologies and guidance. Concurrently, with the reevaluation of flooding hazards, licensees were required to develop and implement mitigating strategies in accordance with NRC Order EA-12-049, "Requirements for Mitigation Strategies for Beyond-Design-Basis External Events" (ADAMS Accession No. ML12054A735). On March 30, 2015, the Commission provided Staff Requirements Memoranda (SRM) (ADAMS Accession No. ML15089A236) to 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), affirming that licensees need to address the reevaluated flooding hazards within their mitigating strategies for beyond-design-basis external events.

**Enclosure two transmitted herewith contains Security-Related Information. When separated from the Enclosure, this document is decontrolled.**

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The NRC staff has reviewed the information submitted by the licensee and has summarized the results of the review in the tables provided as Enclosure 1 to this letter. Table 1 provides the current design-basis flood hazard mechanisms. Table 2 provides reevaluated flood hazard mechanisms; however, reevaluated hazard mechanisms bounded by the current design-basis (Table 1) are not included. Because Table 2 includes security-related information, Enclosure 1 contains the redacted version of Table 2. Enclosure 2 is withheld from public disclosure and restores the security-related information to Table 2.

The NRC staff has concluded that the licensee's reevaluated flood hazards information, as summarized in the Enclosure, is suitable for the assessment of mitigating strategies developed in response to Order EA-12-049 (i.e., defines the mitigating strategies flood hazard information described in guidance documents currently being finalized by the industry and NRC staff) for Robinson. Further, the NRC staff has concluded that the licensee's reevaluated flood hazard information is a suitable input for other assessments associated with Near-Term Task Force Recommendation 2.1 "Flooding." The NRC staff plans to issue a staff assessment documenting the basis for these conclusions at a later time.

In addition, Nuclear Energy Institute (NEI) guidance document NEI 12-06 "Diverse and Flexible Coping Strategies (FLEX) Implementation Guide" is currently being revised. This revision will include a methodology to perform a Mitigating Strategies Assessment (MSA) with respect to the reevaluated flood hazards. Once this methodology is endorsed by the NRC, flood event duration parameters and applicable flood associated effects should be considered as part of the Robinson MSA. The NRC staff will evaluate the flood event duration parameters (including warning time and period of inundation) and flood-related associated effects developed by the licensee during the NRC staff's review of the MSA.

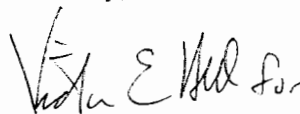
As stated above, Table 2 of the enclosure to this letter describes the reevaluated flood hazards that exceed the current design-basis. In order to complete its response to the information requested by Enclosure 2 to the 50.54(f) letter, the licensee is expected to submit an integrated assessment or a focused evaluation, as appropriate, to address these reevaluated flood hazards, as described in the NRC letter, "Coordination of Request for Information Regarding Flooding Hazard Reevaluation and Mitigating Strategies for Beyond-Design-Basis External Events" (ADAMS Accession No. ML15174A257). This letter describes the changes in the NRC's approach to the flood hazard reevaluations that were approved by the Commission in its SRM to COMSECY-15-0019, "Closure Plan for the Reevaluation of Flooding Hazards for Operating Nuclear Power Plants" (ADAMS Accession No. ML15209A682).

R. Glover

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If you have any questions, please contact me at (301) 415-3809 or e-mail at Juan.Uribe@nrc.gov.

Sincerely,

A handwritten signature in black ink, appearing to read "Juan F. Uribe". The signature is written in a cursive style with a large initial "J" and "U".

Juan F. Uribe, Project Manager  
Hazards Management Branch  
Japan Lessons-Learned Division  
Office of Nuclear Reactor Regulation

Docket No. 50-261

Enclosures:

1. Summary of Results of Flooding Hazard  
Re-Evaluation Report (Redacted Version)
2. Summary of Results of Flooding Hazard  
Re-Evaluation Report (Non-Public Version)

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ENCLOSURE 1:  
SUMMARY TABLES OF  
REEVALUATED FLOOD HAZARD LEVELS  
(Redacted Version)

**Table 1. Current Design Basis Flood Hazards for Use in the MSA**

<b>Mechanism</b>	<b>Stillwater Elevation</b>	<b>Waves/Runup</b>	<b>Design Basis Hazard Elevation</b>	<b>Reference</b>
<b>Local Intense Precipitation</b>	Not included in DB	Not included in DB	Not included in DB	FHRR Section 2.1
<b>Streams and Rivers</b> River PMF	222.0 ft msl	Not applicable	222.0 ft msl	FHRR Section 2.1.2
<b>Failure of Dams and Onsite Water Control/Storage Structures</b> [Redacted]	[Redacted]	[Redacted]	[Redacted]	[Redacted]
<b>Storm Surge</b>	No Impact on the Site Identified	No Impact on the Site Identified	No Impact on the Site Identified	FHRR Section 2.1
<b>Seiche</b>	Not included in DB	Not included in DB	Not included in DB	FHRR Table 4
<b>Tsunami</b>	Not included in DB	Not included in DB	Not included in DB	FHRR Section 2.1
<b>Ice-Induced Flooding</b>	Not included in DB	Not included in DB	Not included in DB	FHRR Section 2.1
<b>Channel Migrations/Diversions</b>	Not included in DB	Not included in DB	Not included in DB	FHRR Section 2.1

Note 1: Reported values are rounded to the nearest one-tenth of a foot.

**Table 2. Reevaluated Flood Hazards for Flood-Causing Mechanisms for Use in the MSA**

<b>Mechanism</b>	<b>Stillwater Elevation</b>	<b>Waves/ Runup</b>	<b>Reevaluated Hazard Elevation</b>	<b>Reference</b>
<b>Local Intense Precipitation</b> LIP scenario with PMP (Fuel Handling Building)	229.1 ft msl	Minimal	229.1 ft msl	Revised FHRR Table 2
<b>Streams and Rivers</b> River PMF	231.8 ft msl	2.0 ft	233.8 ft msl	Duke Energy 2015 <sup>4</sup>
<b>Failure of Dams and Onsite Water Control/Storage Structures</b> [Redacted]	[Redacted]	[Redacted]	[Redacted]	[Redacted]
<b>Storm Surge</b>	221.5 ft msl	10.3 ft	231.8 ft msl	Revised FHRR Table 3 Revised FHRR Table 4
<b>Seiche</b>	221.5 ft msl	4.7 ft	226.2 ft msl	Revised FHRR Section 3.4 Revised FHRR Table 4

Note 1: The licensee is expected to develop flood event duration parameters and applicable flood associated effects to conduct the MSA. The staff will evaluate the flood event duration parameters (including warning time and period of inundation) and flood associated effects during its review of the MSA.

Note 2: Reevaluated hazard mechanisms bounded by the current design basis (see Table 1) are not included in this table

Note 3: Reported values are rounded to the nearest one-tenth of a foot.

Note 4: Duke Energy, 2015, "Submittal of Response to the NRC Request for Additional Information Regarding H. B. Robinson Steam Generating Plant, Unit No. 2, Flood Hazard Reevaluation Report, Related to Selection of the Dam Breach Trigger Elevation," Letter Dated December 15, 2015.

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If you have any questions, please contact me at (301) 415-3809 or e-mail at Juan.Uribe@nrc.gov.

Sincerely,

*/RA by Victor Hall for/*

Juan F. Uribe, Project Manager  
Hazards Management Branch  
Japan Lessons-Learned Division  
Office of Nuclear Reactor Regulation

Docket No. 50-261

Enclosures:

1. Summary of Results of Flooding Hazard  
Re-Evaluation Report (Redacted Version)
2. Summary of Results of Flooding  
Hazard Re-Evaluation Report (Non-Public Version)

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ARivera-Varona, NRO	KErwin, NRO	ACampbell, NRO
MWillingham, NRO	HAhn, NRO	BHarvey, NRO
MShams, NRR		

ADAMS Accession Nos. PKG; ML15357A065; LTR: ML15357A064; ENCL: ML15351A434 **\*via email**

OFFICE	NRR/JLD/JHMB/PM	NRR/JLD/LA	NRO/DSEA/RHM1/TR*	NRO/DSEA/RHM1/BC*
NAME	JUribe (VHall for)	SLent	HAhn	KErwin
DATE	12/23/15	12/23/15	12/21/15	12/21/15
OFFICE	NRR/JLD/JHMB/BC	NRR/JLD/JHMB/PM		
NAME	MShams	JUribe (VHall for)		
DATE	12 / 23 /15	12 / 23 /15		

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