



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

February 9, 2016

Mr. Bryan C. Hanson  
President and Chief  
Nuclear Officer  
Exelon Nuclear  
4300 Winfield Road  
Warrenville, IL 60555

SUBJECT: OYSTER CREEK NUCLEAR GENERATING STATION – INTERIM STAFF  
RESPONSE TO REEVALUATED FLOOD HAZARDS SUBMITTED IN  
RESPONSE TO 10 CFR 50.54(f) INFORMATION REQUEST – FLOOD-  
CAUSING MECHANISM REEVALUATION (CAC NO. MF6111)

Dear Mr. Hanson:

The purpose of this letter is to provide a summary of the U.S. Nuclear Regulatory Commission (NRC) staff's assessment of the reevaluated flood-causing mechanisms described in the March 12, 2015 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML15085A046), flood hazard reevaluation report (FHRR) submitted by Exelon Generation Company, LLC (the licensee) for Oyster Creek Nuclear Generating Station (Oyster Creek), as well as 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 reevaluate 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.

The NRC staff has reviewed the information submitted by the licensee and has summarized the results of the review in the tables provided as an Enclosure 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.

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 Nuclear Energy Institute (NEI) guidance document NEI 12-06, "Diverse and Flexible Coping Strategies (FLEX) Implementation Guide") for Oyster Creek. 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.

Revision 2 of NEI 12-06 includes a methodology to perform a Mitigating Strategies Assessment (MSA) with respect to the reevaluated flood hazards. On January 22, 2016, the NRC staff approved and made publicly available Japan Lessons-Learned Division Interim Staff Guidance (ISG) JLD-ISG-2012-01, Revision 1, "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. ML15357A142), with publication in the *Federal Register* to follow. This ISG endorses Revision 2 of NEI 12-06 (ADAMS Accession No. ML16005A625), dated December 2015. Based on the guidance provided in Revision 2 of the NEI 12-06 guidance document, flood event duration parameters and applicable flood associated effects should be considered as part of the Oyster Creek 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).

B. Hanson

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If you have any questions, please contact me at (301) 415-6197 or e-mail at Tekia.Govan@nrc.gov.

Sincerely,

A handwritten signature in black ink, appearing to read "Tekia Govan". The signature is fluid and cursive, with a long horizontal flourish extending to the right.

Tekia Govan, Project Manager  
Hazards Management Branch  
Japan Lessons-Learned Division  
Office of Nuclear Reactor Regulation

Docket No. 50-219

Enclosure:  
Summary of Results of Flooding Hazard  
Re-Evaluation Report

cc w/encl: Distribution via Listserv

ENCLOSURE:

SUMMARY TABLES OF  
REEVALUATED FLOOD HAZARD LEVELS

**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>	23.5 ft msl	Minimal	23.5 ft msl	FHRR Enclosure 2 Section 2.2
<b>Streams and Rivers</b>	No Impact on the Site Identified	No Impact on the Site Identified	No Impact on the Site Identified	FHRR Enclosure 2 Section 2.2
<b>Failure of Dams and Onsite Water Control/Storage Structures</b>	No Impact on the Site Identified	No Impact on the Site Identified	No Impact on the Site Identified	FHRR Enclosure 2 Section 2.2
<b>Storm Surge</b> Storm Surge	22.0 ft msl	1.0 ft	23.0 ft msl	FHRR Enclosure 2 Section 2.2
<b>Seiche</b>	Not included in DB	Not included in DB	Not included in DB	FHRR Enclosure 2 Section 2.2
<b>Tsunami</b>	Not included in DB	Not included in DB	Not included in DB	FHRR Enclosure 2 Section 2.2
<b>Ice-Induced Flooding</b>	No Impact on the Site Identified	No Impact on the Site Identified	No Impact on the Site Identified	FHRR Enclosure 2 Section 2.2
<b>Channel Migrations/Diversions</b>	Not included in DB	Not included in DB	Not included in DB	FHRR Enclosure 2 Section 2.2

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>				
Max Water Surface Elevation at Door #9	24.4 ft msl	Minimal	24.4 ft msl	Correspondence Dated 1/14/16 (ML16015A001)
<b>Storm Surge</b>				
Site Emergency Building - Combined Effects Flood	22.9 ft msl	3.7 ft	26.6 ft msl	FHRR Enclosure 2 Table 2
Turbine Building - Combined Effects Flood	23.2 ft msl	2.7 ft	25.9 ft msl	FHRR Enclosure 2 Table 2
Intake Structure	23.2 ft msl	1.4 ft	24.6 ft msl	FHRR Enclosure 2 Table 2

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.

B. Hanson

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If you have any questions, please contact me at (301) 415-6197 or e-mail at Tekia.Govan@nrc.gov.

Sincerely,

*/RA/*

Tekia Govan, Project Manager  
Hazards Management Branch  
Japan Lessons-Learned Division  
Office of Nuclear Reactor Regulation

Docket No. 50-219

Enclosure:  
Summary of Results of Flooding Hazard  
Re-Evaluation Report

cc w/encl: Distribution via Listserv

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ARivera-Varona, NRO	KErwin, NRO	ACampbell, NRO
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ADAMS Accession Nos.: PKG: ML16035A266; LTR: ML16035A265; ENCL: ML16034A132  
\*via email

OFFICE	NRR/JLD/JHMB/PM	NRR/JLD/LA	NRO/DSEA/RHM2/TR*	NRO/DSEA/RHM2/BC*
NAME	TGovan	SLent	MLee	ARivera-Varona
DATE	2/4/2016	2/4/2016	2/3/2016	2/3/2016
OFFICE	NRR/JLD/JHMB/BC	NRR/JLD/JHMB/PM		
NAME	MShams	TGovan		
DATE	2/9/2016	2/9/2016		

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