



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

December 24, 2015

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

SUBJECT: LIMERICK GENERATING STATION, UNITS 1 AND 2 – INTERIM STAFF
RESPONSE TO REEVALUATED FLOOD HAZARDS SUBMITTED IN
RESPONSE TO 10 CFR 50.54(f) INFORMATION REQUEST – FLOOD-
CAUSING MECHANISM REEVALUATION (CAC NOS. MF6107 AND MF6108)

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. ML15084A586), flood hazard reevaluation report (FHRR) submitted by Exelon Generation Company, LLC (the licensee) for Limerick Generating Station, Units 1 and 2 (Limerick), 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.

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

B. Hanson

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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 Limerick. 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 Limerick 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.

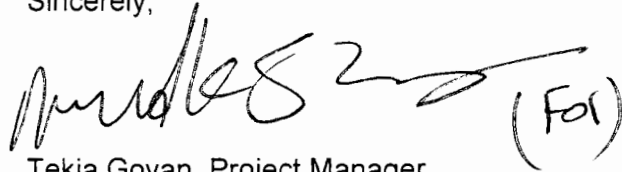
As stated above, Table 2 of the enclosure to this letter describes the reevaluated flood hazards that exceed the current design-basis. In order to complete its response to the information requested by Enclosure 2 to the 50.54(f) letter, the licensee is expected to submit an integrated assessment or a 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', with a circled '(For)' to the right.

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

Docket Nos. 50-352 and 50-353

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)

cc w/encl: Distribution via Listserv

ENCLOSURE 1:
SUMMARY TABLES OF
REEVALUATED FLOOD HAZARD LEVELS

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

Mechanism	Stillwater Elevation	Waves/ Runup	Design Basis Hazard Elevation	Reference
Local Intense Precipitation				
Turbine Building	218.6 ft NGVD29	Minimal	218.6 ft NGVD29	FHRR Section 2.2.1 & Table 4.0.2
Diesel Generator Building	Not included in DB	Not included in DB	Not included in DB	FHRR Section 2.2.1 & Transmittal Letter
Streams and Rivers				
Schuylkill River	174.0 ft NGVD29	No Impact on the Site Identified	174.0 ft NGVD29	FHRR Section 2.2.2
Sanatoga Creek	No Impact on the Site Identified	No Impact on the Site Identified	No Impact on the Site Identified	FHRR Section 2.2.1
Possum Hollow Run	159.0 ft NGVD29	No Impact on the Site Identified	159.0 ft NGVD29	FHRR Section 2.2.1 & Table 4.0.3
Failure of Dams and Onsite Water Control/Storage Structures				
[Redacted]	[Redacted]	[Redacted]	[Redacted]	[Redacted]
Storm Surge				
	No Impact on the Site Identified	No Impact on the Site Identified	No Impact on the Site Identified	FHRR Section 2.2.4
Seiche				
	No Impact on the Site Identified	No Impact on the Site Identified	No Impact on the Site Identified	FHRR Section 2.2.4
Tsunami				
	No Impact on the Site Identified	No Impact on the Site Identified	No Impact on the Site Identified	FHRR Section 2.2.5

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

Mechanism	Stillwater Elevation	Waves/ Runup	Design Basis Hazard Elevation	Reference
Ice-Induced Flooding	No Impact on the Site Identified	No Impact on the Site Identified	No Impact on the Site Identified	FHRR Section 2.2.6
Channel Migrations/Diversions	No Impact on the Site Identified	No Impact on the Site Identified	No Impact on the Site Identified	FHRR Section 2.2.7

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

Mechanism	Stillwater Elevation	Waves/Runup	Reevaluated Hazard Elevation	Reference
Local Intense Precipitation				
Diesel Generator Building	217.1 ft NGVD29	Minimal	217.1 ft NGVD29	FHRR Section 3.1.3 & Transmittal Letter

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 by Mohamed Shams for/

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

Docket Nos. 50-352 and 50-353

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)

DISTRIBUTION:

PUBLIC	JLD R/F	RidsNRRJLD Resource
TGovan, NRR	LQuinn-Willingham, NRO	RidsNroDsea Resource
RidsNrrDorlLpl1-2 Resource	RidsNrrDorl Resource	RidsNrrPMLimerick Resource
RidsRgn1MailCenter Resource	RidsNrrLASLent	RidsOgcMailCenter Resource
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ARivera-Varona, NRO	KErwin, NRO	ACampbell, NRO
MWillingham, NRO	KSee, NRO	BHarvey, NRO
MShams, NRR		

ADAMS Accession No.: PKG: ML15357A519; LTR: ML15357A517; ENCL 1: ML15355A534 (PUBLIC); ENCL 2: ML15355A531 (NON-PUBLIC) *via email

OFFICE	NRR/JLD/JHMB/PM*	NRR/JLD/LA	NRO/DSEA/RHM1/TR*	NRO/DSEA/RHM1/BC*
NAME	TGovan	SLent	WSharp	CCook
DATE	12 / 24 /2015	12 / 23 /2015	12/21/2015	12/21/2015
OFFICE	NRR/JLD/JHMB/BC	NRR/JLD/JHMB/PM		
NAME	MShams	TGovan (MShams for)		
DATE	12 / 24 /2015	12 / 24 /2015		

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