



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

October 13, 2016

Mr. David A. Heacock
President and Chief Nuclear Officer
Dominion Nuclear
Innsbrook Technical Center
5000 Dominion Boulevard
Glen Allen, VA 23060-6711

SUBJECT: MILLSTONE POWER STATION, UNITS 2 AND 3 – INTERIM STAFF
RESPONSE TO REEVALUATED FLOOD HAZARDS SUBMITTED IN
RESPONSE TO 10 CFR 50.54(f) INFORMATION REQUEST – FLOOD-
CAUSING MECHANISM REEVALUATION (CAC NOS. MF6109, AND MF6110)

Dear Mr. Heacock:

The purpose of this letter is to provide a partial 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. ML15078A203), flood hazard reevaluation report (FHRR) submitted by Dominion Nuclear Connecticut, Inc. (the licensee) for Millstone Power Station, Unit Nos. 2 and 3 (MPS2 and MPS3), as well as supplemental information resulting from audits. The staff's review of the storm surge flooding mechanism continues and future correspondence with you on this mechanism will be forthcoming.

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. Concurrent 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 memorandum (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 the reevaluated flood hazard mechanisms; however, the reevaluated flood hazard mechanisms bounded by the current design-basis (Table 1) are not included. Because of the difference in the licensing basis and the elevations for MPS2 and MPS3, there is a Table 1 and Table 2 for each site.

The attached tables do not include the staff's assessment of flooding due to storm surge. The staff's evaluation of this mechanism is continuing and future correspondence documenting the results of the staff's review will be forthcoming. For other flood causing mechanisms, 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 MPS2 and MPS3. 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, dated December 2015, includes a methodology to perform a mitigating strategies assessment (MSA) with respect to the reevaluated flood hazards. On February 29, 2016, the NRC staff published Japan Lessons-Learned Division (JLD) 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), in the *Federal Register* (81 FR 10283). This ISG endorses Revision 2 of NEI 12-06 (ADAMS Accession No. ML16005A625). Based on the guidance provided in Revision 2 of NEI 12-06, flood event duration parameters and applicable flood associated effects should be considered as part of the MPS2 and MPS3 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, each 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). The staff notes that a separate integrated assessment or focused evaluation for the storm surge flooding mechanism maybe needed based on the results of the staff's review.

D. Heacock

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If you have any questions, please contact me at (301) 415-1056 or e-mail at
Lauren.Gibson@nrc.gov.

Sincerely,

A handwritten signature in black ink that reads "Lauren Kati Gibson". The signature is written in a cursive, flowing style.

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

Docket Nos. 50-336 and 50-423

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

cc w/encl: Distribution via Listserv

Table 1. Millstone Power Station, Unit 2: Current Design Basis Flood Hazards for Use in the MSA

Mechanism	Stillwater Elevation	Waves/ Runup	Design Basis Hazard Elevation	Reference
Local Intense Precipitation	14.5 ft NGVD29	Minimal	14.5 ft NGVD29	FHRR Table 1.2-1
Streams and Rivers	No Impact on the Site Identified	No Impact on the Site Identified	No Impact on the Site Identified	FHRR Table 1.2-1
Failure of Dams and Onsite Water Control/Storage Structures	Not included in DB	Not included in DB	Not included in DB	FHRR Sections 2.3.3 & 3.3
Storm Surge				
Storm Surge within the Intake Structure for Unit 2	26.5 ft NGVD29	Not applicable	26.5 ft NGVD29	FHRR Table 1.2-1
Storm Surge at the Powerblock	21.3 ft NGVD29	3.8 ft	25.1 ft NGVD29	FHRR Table 1.2-1
Seiche	No Impact on the Site Identified	No Impact on the Site Identified	No Impact on the Site Identified	FHRR Table 1.2-1
Tsunami	Not included in DB	Not included in DB	Not included in DB	FHRR Table 1.2-1
Ice-Induced Flooding	No Impact on the Site Identified	No Impact on the Site Identified	No Impact on the Site Identified	FHRR Table 1.2-1

Table 1. Millstone Power Station, Unit 2: Current Design Basis Flood Hazards for Use in the MSA

Mechanism	Stillwater Elevation	Waves/ Runup	Design Basis Hazard Elevation	Reference
Channel Migrations/Diversions	No Impact on the Site Identified	No Impact on the Site Identified	No Impact on the Site Identified	FHRR Table 1.2-1

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

Table 2. Millstone Power Station, Unit 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	17.5 ft NGVD29	Minimal	17.5 ft NGVD29	FHRR Section 3.1
Streams and Rivers	11.2 ft NGVD29	Not applicable	11.2 ft NGVD29	FHRR Section 2.2
Storm Surge	Under Review	Under Review	Under Review	
Tsunami	14.7 ft NGVD29	Not applicable	14.7 ft NGVD29	FHRR Section 2.6

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.

Table 1. Millstone Power Station, Unit 3: Current Design Basis Flood Hazards for Use in the MSA

Mechanism	Stillwater Elevation	Waves/Runup	Design Basis Hazard Elevation	Reference
Local Intense Precipitation				
Auxiliary Building Door A-24-1	24.9 ft NGVD29	Minimal	24.9 ft NGVD29	FHRR Table 1.2-3
Control Building	24.3 ft NGVD29	Minimal	24.3 ft NGVD29	FHRR Table 1.2-3
Emergency Generator Enclosure	24.3 ft NGVD29	Minimal	24.3 ft NGVD29	FHRR Table 1.2-3
Demineralized Water Storage Tank Block House	24.9 ft NGVD29	Minimal	24.9 ft NGVD29	FHRR Table 1.2-3
Fuel Building	24.9 ft NGVD29	Minimal	24.9 ft NGVD29	FHRR Table 1.2-3
Auxiliary Building Door A-24-6	24.9 ft NGVD29	Minimal	24.9 ft NGVD29	FHRR Table 1.2-3
Engineered Safety Features Building	24.9 ft NGVD29	Minimal	24.9 ft NGVD29	FHRR Table 1.2-3
Main Steam Valve Building	24.9 ft NGVD29	Minimal	24.9 ft NGVD29	FHRR Table 1.2-3
Valve Enclosure	24.9 ft NGVD29	Minimal	24.9 ft NGVD29	FHRR Table 1.2-3
Hydrogen Recombiner Building	24.9 ft NGVD29	Minimal	24.9 ft NGVD29	FHRR Table 1.2-3
Streams and Rivers				
	No Impact on the Site Identified	No Impact on the Site Identified	No Impact on the Site Identified	FHRR Table 1.2-2

Table 1. Millstone Power Station, Unit 3: Current Design Basis Flood Hazards for Use in the MSA

Mechanism	Stillwater Elevation	Waves/Runup	Design Basis Hazard Elevation	Reference
Failure of Dams and Onsite Water Control/Storage Structures	Not included in DB	Not included in DB	Not included in DB	FHRR Sections 2.3.3 & 3.3
Storm Surge				
Storm Surge at Seaward Wall of Intake Structure for Unit 3	41.2 ft NGVD29	Not applicable	41.2 ft NGVD29	FHRR Table 1.2-2
Storm Surge at Powerblock	19.7 ft NGVD29	4.1 ft	23.8 ft NGVD29	FHRR Table 1.2-2
Seiche	No Impact on the Site Identified	No Impact on the Site Identified	No Impact on the Site Identified	FHRR Table 1.2-1
Tsunami	Not included in DB	Not included in DB	Not included in DB	FHRR Table 1.2-2
Ice-Induced Flooding	No Impact on the Site Identified	No Impact on the Site Identified	No Impact on the Site Identified	FHRR Table 1.2-1
Channel Migrations/Diversions	No Impact on the Site Identified	No Impact on the Site Identified	No Impact on the Site Identified	FHRR Table 1.2-1

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

Table 2. Millstone Power Station, Unit 3: Reevaluated Flood Hazards for Flood-Causing Mechanisms for Use in the MSA

Mechanism	Stillwater Elevation	Waves/Runup	Reevaluated Hazard Elevation	Reference
Streams and Rivers	11.2 ft NGVD29	Not applicable	11.2 ft NGVD29	FHRR Section 2.2
Storm Surge	Under Review	Under Review	Under Review	

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.

D. Heacock

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If you have any questions, please contact me at (301) 415-1056 or e-mail at Lauren.Gibson@nrc.gov.

Sincerely,

/RA/

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

Docket Nos. 50-336 and 50-423

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

cc w/encl: Distribution via Listserv

DISTRIBUTION:

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MWillingham, NRO	LHibler, NRO	BHarvey, NRO
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ADAMS Accession Nos.: PKG ML16267A170 LTR: ML16267A131 ENCL: ML16267A168 *via email

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