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

February 29, 2016

Mr. David A. Heacock
President and Chief Nuclear Officer
Virginia Electric and Power Company
5000 Dominion Blvd.
Glen Allen, VA 23060-6711

SUBJECT: SURRY POWER STATION, UNIT NOS. 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. MF6102 AND MF6103)

Dear Mr. Heacock:

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. ML15078A291), flood hazard reevaluation report (FHRR) submitted by Virginia Electric and Power Company (the licensee) for Surry Power Station, Unit Nos. 1 and 2 (Surry), 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 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.

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 Nuclear Energy Institute (NEI) guidance document NEI 12-06, "Diverse and Flexible Coping Strategies (FLEX) Implementation Guide") for Surry. 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 February 29, 2016, the NRC staff published 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) in the *Federal Register*. 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 Surry 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).

If you have any questions, please contact me at (301) 415-2915 or e-mail at Victor.Hall@nrc.gov.

Sincerely,

Victor Hall, Senior Project Manager
Hazards Management Branch
Japan Lessons-Learned Division
Office of Nuclear Reactor Regulation

Docket Nos. 50-280 and 50-281

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:

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	Not included in DB	Not included in DB	Not included in DB	FHRR Table 3.0-1
Streams and Rivers	No Impact on the Site Identified	No Impact on the Site Identified	No Impact on the Site Identified	FHRR Table 3.0-1
Failure of Dams and Onsite Water Control/Storage Structures	No Impact on the Site Identified	No Impact on the Site Identified	No Impact on the Site Identified	FHRR Table 3.0-1
Storm Surge				
PMH Flooding West Side	22.7 MSL	1.3 ft	24.0 MSL	FHRR Section 3.9
PMH Flooding East Side	22.7 MSL	5.9 ft	28.6 MSL	FHRR Section 3.9
Seiche	No Impact on the Site Identified	No Impact on the Site Identified	No Impact on the Site Identified	FHRR Table 3.0-1
Tsunami	No Impact on the Site Identified	No Impact on the Site Identified	No Impact on the Site Identified	FHRR Table 3.0-1
Ice-Induced Flooding	Not included in DB	Not included in DB	Not included in DB	FHRR Table 3.0-1

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

Mechanism	Stillwater Elevation	Waves/ Runup	Design Basis Hazard Elevation	Reference
Channel Migrations/Diversions	Not included in DB	Not included in DB	Not included in DB	FHRR Table 3.0-1

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

Mechanism	Stillwater Elevation	Waves/ Runup	Reevaluated Hazard Elevation	Reference
Local Intense Precipitation				
Site-specific PMP	29.4 MSL	Minimal	29.4 MSL	FHRR Table 3.0-1 and Section 2.1.4
Failure of Dams and Onsite Water Control/Storage Structures				
[Redacted]	[Redacted]	[Redacted]	[Redacted]	[Redacted]
Storm Surge				
Deterministic PMSS with James River 25-year Flood, East Side of Plant, Low Level Intake Structure	24.2 MSL	14.6 ft	38.8 MSL	FHRR Section 2.9-7
Deterministic PMSS with James River 25-year Flood, West Side of Plant	24.2 MSL	Minimal	24.2 MSL	FHRR Table 2.9-4, FHRR Section 2.9.2.2, and FHRR Section 2.9.1.1

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: Onsite Structure Failure flood causing mechanism elevations are reported as the highest elevations at specific door locations; it appears from the FHRR that the licensee may intend to specify a different flood elevation for each door, based on model output.

If you have any questions, please contact me at (301) 415-2915 or e-mail at Victor.Hall@nrc.gov.

Sincerely,

/RA/

Victor Hall, Senior Project Manager
Hazards Management Branch
Japan Lessons-Learned Division
Office of Nuclear Reactor Regulation

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ADAMS Accession Nos.: PKG ML16041A332 LTR: ML16041A341 ENCL1: ML16049A542
ENCL2: ML16049A534 ***via email**

OFFICE	NRR/JLD/JHMB/PM	NRR/JLD/LA	NRO/DSEA/RHM2/TR*	NRO/DSEA/RHM2/TR*
NAME	VHall	SLent	NTiruneh	LHibler
DATE	02/09/16	02/10/16	02/18/16	02/18/16
OFFICE	NRO/DSEA/RHM2/BC*	NRR/JLD/JHMB/BC	NRR/JLD/JHMB/PM	
NAME	ARivera-Varona	MShams	VHall	
DATE	02/18/16	02/22/16	02/29/16	

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