



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

October 21, 2015

Mr. Jon A. Franke  
Site Vice President  
Susquehanna Nuclear, LLC  
769 Salem Boulevard  
NUCSB3  
Berwick, PA 18603-0467

SUBJECT: NUCLEAR REGULATORY COMMISSION REPORT FOR THE AUDIT OF  
SUSQUEHANNA NUCLEAR, LLC'S FLOOD HAZARD REEVALUATION  
REPORT SUBMITTALS RELATING TO THE NEAR-TERM TASK FORCE  
RECOMMENDATION 2.1-FLOODING FOR SUSQUEHANNA UNITS 1 AND 2  
(TAC NOS. MF6037 AND MF6038)

Dear Mr. Franke:

By letter dated June 4, 2015 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML15153A163), the U.S. Nuclear Regulatory Commission (NRC) informed you of the staff's plan to conduct a regulatory audit of Susquehanna Nuclear, LLC's (the licensee) Flood Hazard Reevaluation Report (FHRR) submittals related to the Near-Term Task Force Recommendation 2.1-Flooding for Susquehanna Steam Electric Station, Units 1 and 2. The audit was intended to support the NRC staff review of the licensee's FHRR and the subsequent issuance of a staff assessment.

The audit was conducted on September 9, 2015, and was performed consistent with NRC Office of Nuclear Reactor Regulation, Office Instruction LIC-111, "Regulatory Audits," dated December 29, 2008 (ADAMS Accession No. ML082900195). Therefore, the purpose of this letter is to provide you with the final audit report which summarizes and documents the NRC's regulatory audit of the licensee's FHRR submittal.

J. Franke

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

Sincerely,

A handwritten signature in black ink, appearing to read "Tekia V. Govan", with a long, sweeping horizontal flourish extending to the right.

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

Docket Nos. 50-387 and 50-388

Enclosure:  
Audit Report

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UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
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NUCLEAR REGULATORY COMMISSION AUDIT REPORT FOR THE AUDIT OF  
SUSQUEHANNA NUCLEAR, LLC'S FLOOD HAZARD REEVALUATION REPORT  
SUBMITTALS RELATING TO THE NEAR-TERM TASK FORCE RECOMMENDATION 2.1-  
FLOODING FOR SUSQUEHANNA STEAM ELECTRIC STATION, UNITS 1 AND 2

BACKGROUND AND AUDIT BASIS

By letter dated March 12, 2012, the U.S. Nuclear Regulatory Commission (NRC) issued a request for information to all power reactor licensees and holders of construction permits in active or deferred status, pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR), Section 50.54(f) "Conditions of license" (hereafter referred to as the "50.54(f) letter"). The request was issued in connection with implementing lessons-learned from the 2011 accident at the Fukushima Dai-ichi nuclear power plant, as documented in The Near-Term Task Force Review of Insights from the Fukushima Dai-ichi Accident. Recommendation 2.1 in that document recommended that the NRC staff issue orders to all licensees to reevaluate seismic and flooding for their sites against current NRC requirements and guidance. Subsequent Staff Requirements Memoranda associated with Commission Papers SECY 11-0124 and SECY-11-0137, instructed the NRC staff to issue requests for information to licensees pursuant to 10 CFR 50.54(f).

By letter dated March 3, 2015, Susquehanna Nuclear, LLC (Susquehanna, the licensee) submitted its Flood Hazard Reevaluation Reports (FHRRs) for Susquehanna Steam Electric Station, Units 1 and 2 (ADAMS Accession No. ML15063A319). The NRC is in the process of reviewing the aforementioned submittal and has completed a regulatory audit of Susquehanna to better understand the development of the submittal, identify any similarities/differences with past work completed and ultimately aid in its review of licensees' FHRR. This audit summary is being completed in accordance with the guidance set forth in NRC Office of Nuclear Reactor Regulation, Office Instruction LIC-111, "Regulatory Audits," dated December 29, 2008, (Agencywide Documents Access and Management System (ADAMS) Accession No. ML082900195).

AUDIT LOCATION AND DATES

The audit was completed by document review via a webinar session in conjunction with the use of Susquehanna's established electronic reading room and teleconference on September 9, 2015, from 1:30pm to 2:30pm.

Enclosure

AUDIT TEAM

<b>Title</b>	<b>Team Member</b>	<b>Organization</b>
Team Leader, NRR/JLD	Tekia Govan	NRC
Deputy Division Director, NRO/DSEA	Andy Campbell	NRC
Technical Monitor	Laura Quinn-Willingham	NRC
Technical Lead	Kenneth See	NRC
Technical Team Lead	Kenneth Erwin	NRC

A list of the Susquehanna participants can be found in Attachment 2.

DOCUMENTS AUDITED

Attachment 1 of this report contains a list which details the documents that were reviewed by the NRC staff, in part or in whole, as part of this audit. The documents were located in an electronic reading room during the NRC staff's review. The documents, or portions thereof, that were used by the staff as part of the technical analysis and/or as reference in the completion of the staff assessment, were submitted by the licensee and docketed for completeness of information, as necessary. These documents are identified in Table 1.

AUDIT ACTIVITIES

In general, the audit activities consisted mainly of the following actions:

- Review background information on site topography and geographical characteristics of the watershed.
- Review site physical features and plant layout.
- Understand the selection of important assumptions and parameters that would be the basis for evaluating the individual flood causing mechanisms described in the 50.54(f) letter.
- Review model input/output files to computer analyses such as Delft-3D and FLO-2D to have an understanding of how modeling assumptions were programmed and executed.

Table 1 summarizes specific technical topics (and resolution) of important items that were discussed and clarified during the audit. The items discussed in Table 1 may be referenced/mentioned in the staff assessment in more detail.

Table 1: Technical Topics of Discussion

<b>Info Need No.</b>	<b>Information Need Description</b>	<b>Post-Audit Status</b>
1	The use of Current Licensing Basis (CLB) and Current Design-Basis (CDB) appears to be interchangeable in the FHRR. The NRC staff request the licensee to clarify its use of the terms.	Licensee will provide on the docket confirmation that use of CLB vs CDB interchangeably in the FHRR is intended to mean CDB throughout.
2	The NRC staff requests that the licensee discusses why a CDB was not provided for the Local Intense Precipitation (LIP).	Licensee will provide on the docket the CDB values and supporting information for LIP, as this information was not provided in the FHRR.
3	The NRC staff requests that the licensee discusses why a CDB was not provided for the Cooling Tower Basin.	Licensee will provide on the docket CDB values and supporting information for the Cooling Tower Basin, as this information was not provided in the FHRR.
4	In Section 3.3.8.1 of the FHRR, the licensee discusses failure modes for the Cooling Tower Basins, but does not discuss how they were developed. Licensee asked to please provide this information on the docket.	Licensee will provide on the docket discussion to clarify the information provided in Section 3.3.8.1 in the FHRR. Specifically, the licensee will discuss how the failure modes for the Cooling Tower Basin were developed using the 3 historical cases, provided in the calculation package, to support their conclusion.
5	Provide on the docket the following schematics from RIZZO Calculation 12-4834 F-06, Revision 0.	Licensee will provide on the docket the following Figures 2-2, 2-3, 2-5, and 7-7.

On September 24, 2015, Susquehanna provided on the docket the response to all of the above information needs (ADAMS Accession No. ML15267A600). After review of this information, the NRC staff determined that a necessary CDB value was omitted from the response for information need number 2. The licensee was informed of this omission of information on September 29, 2015. On October 2, 2015, Susquehanna provided the omitted information and the NRC staff concluded the audit (ADAMS Accession No. ML15288A563).

EXIT MEETING/BRIEFING

On October 2, 2015, the NRC staff closed out the discussion of the technical topics described above. There are no outstanding information needs remaining as a result of this audit.

## ATTACHMENT 1

<b>FHRR Reference Lists</b>	
12-4834 F-01	Local Intense Precipitation Flooding – Revision 0
12-4834 F-02	Wind Waves Coincident with the LIP – Revision 0
12-4834 F-03	Screening out of River Flooding – Revision 0
12-4834 F-04	Screening out of Dam Failure Flooding – Revision 0
12-4834 F-05	Screening out of Combined Effects Flooding – Revision 0
12-4834 F-06	Cooling Tower Rupture Analysis – Revision 0

**ATTACHMENT 2**  
**List of Susquehanna Audit Participants**

Name

1. Michael Crowthers
2. Jemie Dababneh

Organization

Talen Energy  
Rizzo Associates

J. Franke

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

Sincerely,

*/RA/*

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

Docket Nos. 50-387 and 50-388

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**ADAMS Accession No.: ML15281A156**

OFFICE	NRR/JLD/JHMB/PM	NRR/JLD/JHMB/LA	NRR/JLD/JHMB/BC	NRR/JLD/JHMB/PM
NAME	TGovan	SLent	MShams	TGovan
DATE	10/8/2015	10/8/2015	10/21/2015	10/21/2015

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