



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

April 20, 2017

Mr. William R. Gideon
Site Vice President
Brunswick Steam Electric Plant
8470 River Road SE (M/C BNP001)
Southport, NC 28461

SUBJECT: BRUNSWICK STEAM ELECTRIC PLANT, UNITS 1 AND 2 - STAFF REVIEW OF HIGH FREQUENCY CONFIRMATION ASSOCIATED WITH REEVALUATED SEISMIC HAZARD IN RESPONSE TO MARCH 12, 2012, 50.54(f) REQUEST FOR INFORMATION

Dear Mr. Gideon:

The U.S. Nuclear Regulatory Commission (NRC) is issuing this letter to inform Duke Energy Progress, LLC (Duke, the licensee) of the NRC staff's review of the high frequency confirmation letter for Brunswick Steam Electric Plant, Units 1 and 2 (Brunswick) and conclusion that the licensee's assessment was performed consistent with the guidance.

BACKGROUND

By letter dated March 12, 2012 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML12053A340), the U.S. Nuclear Regulatory Commission (NRC) issued a request for information pursuant to Title 10 of the *Code of Federal Regulations* Part 50, Section 50.54(f) (hereafter referred to as the 50.54(f) letter). The request was issued as part of implementing lessons-learned from the accident at the Fukushima Dai-ichi nuclear power plant. Enclosure 1 to the 50.54(f) letter requested that licensees reevaluate seismic hazards at their sites using present-day methodologies and guidance. Enclosure 1, Item 4, of the 50.54(f) letter requested that licensees perform a comparison of the ground motion response spectrum (GMRS) and safe shutdown earthquake (SSE); and if the GMRS exceeds the SSE only at higher frequencies, information related to the functionality of high frequency sensitive structures, systems and components (SSCs) is requested. Attachment 1, Step 3 of the March 12, 2012, 50.54(f) letter further clarified that licensees with high frequency exceedance should provide a confirmation that SSCs, which may be affected by high-frequency ground motion, will maintain their functions important to safety.

By letter dated July 30, 2015 (ADAMS Accession No. ML15223A100), the Nuclear Energy Institute submitted an Electric Power Research Institute (EPRI) report entitled, High Frequency Program: Application Guidance for Functional Confirmation and Fragility Evaluation (EPRI 3002004396) for NRC review and endorsement. The NRC endorsed the guidance by letter dated September 17, 2015 (ADAMS Accession No. ML15218A569), as an acceptable method for licensees to use, in addition to the SPID guidance, when responding to NRC Requested Information Item (4) in Enclosure 1 of the 50.54(f) letter.

As stated in the NRC staff assessment for Brunswick dated March 1, 2016 (ADAMS Accession No. ML16041A435), use of the Individual Plant Examination of External Events (IPEEE) high

confidence of low probability of failure (HCLPF) spectrum (IHS) for screening was dependent on Duke completing a relay chatter review. Based on its IHS curve, Brunswick screened in to perform a high frequency confirmation.

REVIEW OF LICENSEE HIGH FREQUENCY CAPACITY CONFIRMATION

By separate letters dated December 15, 2016 (ADAMS Accession Nos. ML16365A023 and ML16365A024), Duke stated that they completed the relay chatter review and through the second letter, submitted the limited exceedance high frequency confirmation for Brunswick. The NRC staff review confirmed that GMRS exceedance above the Brunswick IHS is on the order of 10 percent or less of the area under the IHS curve over the frequency range of exceedance.

Specifically, the NRC staff confirmed that Brunswick met the 3.1.2 "Limited High Frequency Exceedance Screening" criterion described in EPRI Report 3002004396. For the high frequency confirmation, this level of exceedance over limited frequency ranges does not represent a concern and thus does not warrant additional evaluation to confirm the functionality of control devices in the high frequency range.

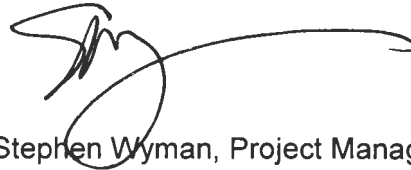
Based on its review of the licensee's letter, the NRC staff concludes that the licensee's screening meets the criteria outlined in EPRI Report 3002004396, and, therefore, is acceptable to the staff. Application of this review is limited to the high frequency confirmation as part of the 50.54(f) letter.

CLOSURE OF PHASE TWO EVALUATION

As noted in an NRC letter dated October 27, 2015 (ADAMS Accession No. ML15194A015), Brunswick screened in to perform a relay chatter review, as well as spent fuel pool and high frequency limited-scope evaluations. With the previous completion of the spent fuel pool evaluation, the NRC staff concludes that no further response or regulatory action for the seismic reevaluation associated with the 50.54(f) letter is required for Brunswick. Therefore, this letter closes out the NRC's efforts associated with Phases 1 and 2 of the seismic reevaluation portion of the 50.54(f) letter.

If you have any questions, please contact Steve Wyman at (301) 415-3041 or via e-mail at Stephen.Wyman@nrc.gov.

Sincerely,



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

Docket Nos. 50-325 and 50-324

cc: Distribution via Listserv

BRUNSWICK STEAM ELECTRIC PLANT, UNITS 1 AND 2 - STAFF REVIEW OF HIGH FREQUENCY CONFIRMATION ASSOCIATED WITH REEVALUATED SEISMIC HAZARD IN RESPONSE TO MARCH 12, 2012, 50.54(f) REQUEST FOR INFORMATION DATED APRIL 20, 2017

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