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10 CFR 50.54(f)

December 15, 2016

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U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555-0001

Subject: Brunswick Steam Electric Plant (BSEP), Unit Nos. 1 and 2
Renewed Facility Operating License Nos. DPR-71 and DPR-62
NRC Docket Nos. 50-325 and 50-324
High Frequency Supplement to Seismic Hazard Screening Report, Response to
NRC Request for Information Pursuant to 10 CFR 50.54(f) Regarding
Recommendation 2.1 of the Near-Term Task Force Review of Insights from the
Fukushima Dai-ichi Accident

References:

1. Nuclear Regulatory Commission (NRC) Letter, *Request for Information Pursuant to Title 10 of the Code of Federal Regulations 50.54(f) Regarding Recommendations 2.1, 2.3, and 9.3, of the Near-Term Task Force Review of Insights from the Fukushima Dai-ichi Accident*, dated March 12, 2012, Agencywide Documents Access and Management System (ADAMS) Accession Number ML12053A340
2. NRC Letter, *Electric Power Research Institute Report [3002000704], Seismic Evaluation Guidance: Augmented Approach for the Resolution of Fukushima Near-Term Task Force Recommendation 2.1: Seismic, as an Acceptable Alternative to the March 12, 2012, Information Request for Seismic Reevaluations*, dated May 7, 2013, ADAMS Accession Number ML13106A331
3. Electric Power Research Institute (EPRI) 1025287, *Seismic Evaluation Guidance, Screening, Prioritization and Implementation Details (SPID) for the Resolution of Fukushima Near-Term Task Force Recommendation 2.1: Seismic*, dated November 2012, ADAMS Accession Number ML12333A170
4. NRC Letter, *Endorsement of Electric Power Research Institute Final Draft Report 1025287: Seismic Evaluation Guidance*, dated February 15, 2013, ADAMS Accession No. ML12319A074
5. Duke Energy Letter, *Seismic Hazard and Screening Report (CEUS Sites), Response to NRC Request for Information Pursuant to Title 10 of the Code of Federal Regulations 50.54(f) Regarding the Seismic Aspects of Recommendation 2.1 of the Near-Term Task Force Review of Insights from the Fukushima Dai-ichi Accident*, dated March 31, 2014, ADAMS Accession Number ML14106A461
6. NRC Letter, *Screening and Prioritization Results Regarding Information Pursuant to Title 10 of the Code of Federal Regulations 50.54(f) Regarding Seismic Hazard Reevaluations for Recommendation 2.1 of the Near-Term Task Force Reviews of Insights from the Fukushima Dai-ichi Accident*, dated May 9, 2014, ADAMS Accession Number ML14111A147

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7. NRC Letter, *Final Determination of Licensee Seismic Probabilistic Risk Assessments under the Request for Information Pursuant to Title 10 of the Code of Federal Regulations 50.54(f) Regarding Recommendation 2.1 "Seismic" of the Near-Term Task Force Review of Insights from the Fukushima Dai-ichi Accident*, dated October 27, 2015, ADAMS Accession Number ML15194A015
8. Nuclear Energy Institute (NEI) Letter, *Request for NRC Endorsement of High Frequency Program: Application Guidance for Functional Confirmation and Fragility Evaluation (EPRI 3002004396)*, dated July 30, 2015, ADAMS Accession Number ML15223A100
9. EPRI, *High Frequency Program: Application Guidance for Functional Confirmation and Fragility Evaluation*, contained in NEI letter dated July 30, 2015, ADAMS Accession Number ML15223A102
10. NRC Letter, *Endorsement of Electric Power Research Institute Final Draft Report 3002004396, High Frequency Program: Application Guidance for Functional Confirmation and Fragility*, dated September 17, 2015, ADAMS Accession Number ML15218A569
11. NRC Letter, *Brunswick Steam Electric Plant, Units 1 and 2 – Staff Assessment of Information Provided Pursuant to Title 10 of the Code of Federal Regulations Part 50, Section 50.54(f), Seismic Hazard Reevaluations for Recommendation 2.1 of the Near-Term Task Force Review of Insights from the Fukushima Dai-ichi Accident (CAC NOS. MF3824 and MF3825)*, dated March 1, 2016, ADAMS Accession Number ML16041A435

Ladies and Gentlemen,

On March 12, 2012, the Nuclear Regulatory Commission (NRC) issued a Request for Information per 10 CFR 50.54(f) (i.e., Reference 1) to all power reactor licensees. The required response section of Enclosure 1 to that request indicated that licensees should provide a Seismic Hazard Evaluation and Screening Report within 1.5 years from the date of the letter for Central and Eastern United States (CEUS) nuclear power plants. By NRC letter dated May 7, 2013 (i.e., Reference 2), the date to submit the report was extended to March 31, 2014.

Reference 3 contains industry guidance and detailed information to be included in the Seismic Hazard Evaluation and Screening Report submittals. The industry guidance was endorsed by the NRC in Reference 4. In accordance with the screening, prioritization, and implementation details report (SPID) and Augmented Approach guidance (i.e., References 2, 3, and 4), the reevaluated seismic hazard is used to determine if additional seismic risk evaluations are warranted for a plant. Specifically, the reevaluated horizontal ground motion response spectrum (GMRS) at the control point elevation is compared to the existing safe shutdown earthquake (SSE) or Individual Plant Examination for External Events (IPEEE) High Confidence of Low Probability of Failure (HCLPF) Spectrum (IHS) to determine if a plant is required to perform a high frequency confirmation.

By letter dated March 31, 2014 (i.e., Reference 5), Brunswick Steam Electric Plant (BSEP) submitted the Seismic Hazard Evaluation and Screening Report for the BSEP, Unit Nos. 1 and 2. By letter dated May 9, 2014 (i.e., Reference 6), the NRC transmitted the results of the screening and prioritization review of the seismic hazards reevaluation submittal for Brunswick Steam Electric Plant (BSEP), Units 1 and 2.

Within the May 9, 2014 letter (i.e., Reference 6), the NRC acknowledged that these limited scope evaluations will require additional development of the assessment process. By

Reference 8, the Nuclear Energy Institute (NEI) submitted an Electric Power Research Institute (EPRI) report titled, "High Frequency Program: Application Guidance for Functional Confirmation and Fragility Evaluation (EPRI 3002004396)" (i.e., Reference 9) for NRC review and endorsement. NRC endorsement was provided by Reference 10.

By letter dated October 27, 2015 (i.e., Reference 7), the NRC transmitted the Final Determination of Licensee Seismic Probabilistic Risk Assessments under the request for information for BSEP, Units 1 and 2. As noted in the October 27, 2015, NRC letter, BSEP is to conduct a limited scope high frequency confirmation.

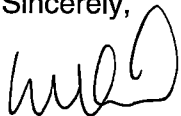
The supplemental calculation for BSEP shows that the GMRS exceedance area between the GMRS and IHS/Review Level Earthquake (RLE) is on the order of 10 percent or less of the area under the IHS/RLE over the frequency range of exceedance. As such, the GMRS exceedance is consistent with the criteria identified in Section 3.1.2 of Reference 9, and no additional evaluation is necessary. The enclosure to this letter provides the GMRS and IHS/RLE information.

This letter contains no new Regulatory Commitments.

If you have any questions regarding this submittal, please contact Mr. Lee Grzeck, Manager - Regulatory Affairs, at (910) 457-2487.

I declare under penalty of perjury that the foregoing is true and correct. Executed on December 15, 2016.

Sincerely,

A handwritten signature in black ink, appearing to read 'W. R. Gideon', written over a horizontal line.

William R. Gideon

Enclosure:

Brunswick Steam Electric Plant (BSEP), Unit Nos. 1 and 2, Ground Motion Response Spectrum (GMRS) and Individual Plant Examination for External Events (IPEEE) High Confidence of Low Probability of Failure (HCLPF) Spectrum (IHS) / Review Level Earthquake (RLE) Information

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cc:

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Enclosure

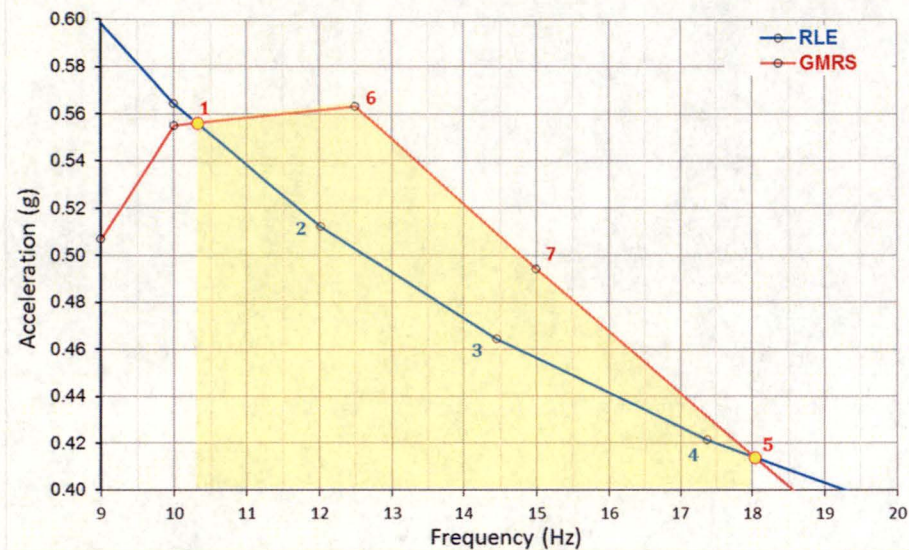
Brunswick Steam Electric Plant (BSEP), Unit Nos. 1 and 2,
Ground Motion Response Spectrum (GMRS) and Individual Plant Examination for External
Events (IPEEE) High Confidence of Low Probability of Failure (HCLPF) Spectrum (IHS) /
Review Level Earthquake (RLE) Information

Brunswick Steam Electric Plant (BSEP), Unit Nos. 1 and 2

Ground Motion Response Spectrum (GMRS) and Individual Plant Examination for External Events (IPEEE) High of Confidence of Low Probability of Failure (HCLPF) Spectrum (IHS) Information / Review Level Earthquake (RLE) Information

Figure 4, Exceedance of GMRS over RLE in Frequency Range from 10 to 20Hz, from BSEP Calculation 0SEIS-1044 is shown below. The percentage (%) of area exceedance is 6.9%.

Figure 4: Exceedance of GMRS over RLE in Frequency Range from 10 to 20Hz



Brunswick Steam Electric Plant (BSEP), Unit Nos. 1 and 2

Ground Motion Response Spectrum (GMRS) and Individual Plant Examination for External Events (IPEEE) High of Confidence of Low Probability of Failure (HCLPF) Spectrum (IHS) Information / Review Level Earthquake (RLE) Information

Figure 3.4-1 from NRC letter (i.e., Cover Letter Reference 11) is shown below.

Figure 3.4-1 Comparison of the Staff's GMRS with Licensee's GMRS and the SSE for the Brunswick site

