



Justin T. Wheat  
Nuclear Licensing Manager

40 Inverness Center Parkway  
Post Office Box 1295  
Birmingham, AL 35242  
205 992 5998 tel  
205 992 7601 fax

December 5, 2017

Docket Nos: 50-424  
50-425

jt wheat@southernco.com

NL-17-1889

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

Vogtle Electric Generating Plant - Units 1 and 2  
NEI 12-06, Appendix H, Revision 4, H.4.5 Path 5: GMRS > 2 X SSE,  
Mitigating Strategies Assessment (MSA) report for the New Seismic Hazard Information

References:

1. NEI 12-06, Revision 4, Diverse and Flexible Coping Strategies (FLEX) Implementation Guide, December 2016 (ML16354B421).
2. JLD-ISG-2012-01, Revision 2, Compliance with Order EA-12-049, Order Modifying Licenses with Regard to Requirements for Mitigating Strategies for Beyond-Design-Basis External Events, February 2017 (ML17005A188).
3. Letter to NRC, "Vogtle Electric Generating Plant – Units 1 and 2, Seismic Hazard and Screening Report for CEUS Sites," dated March 31, 2014 (ML 14092A019).
4. Letter to NRC, "Vogtle Electric Generating Plant – Units 1 and 2, Fukushima Near-Term Task Force Recommendation 2.1: Seismic, Seismic Probabilistic Risk Assessment," dated March 27, 2017 (ML17088A130).
5. NRC Letter, "Vogtle Electric Generating 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," dated April 20, 2015 (ML15054A296).
6. EPRI, "Seismic Evaluation Guidance: Screening, Prioritization and Implementation Details (SPID) for the Resolution of Fukushima Near-Term Task Force Recommendation 2.1: Seismic", Report Number 1025287, Palo Alto, CA, November 2012.
7. Letter to NRC, "Vogtle Electric Generating Plant – Units 1 and 2 - Spent Fuel Pool Evaluation Submittal 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", dated October 31, 2017, (ML17304B382).
8. Letter to NRC, "Vogtle Electric Generating Plant, Units 1 and 2 – Notification of Full Compliance of Required Action for NRC Order EA-12-049, Mitigation Strategies of Beyond-Design-Basis External Events," dated May 23, 2016 (ML16146A607).
9. NRC Letter, Vogtle Electric Generating Plant, Units 1 and 2 – Safety Evaluation Regarding Implementation of Mitigating Strategies and Reliable Spent Fuel Pool Instrumentation Related to Orders EA-12-049 and EA-12-051," dated November 14, 2016 (ML16301A419).

10. Vogtle Electric Generating Plant Units 1 and 2, "Final Integrated Plan, U.S. Nuclear Regulatory Commission Order EA-12-049, Strategies for Beyond Design Basis External Events", Version 1 dated October 2017.

Ladies and Gentlemen:

The purpose of this letter is to provide the results of the assessment for Vogtle Electric Generating Plant - Units 1 and 2 (VEGP) to demonstrate that Seismic Probabilistic Risk Assessment (SPRA) based alternate mitigating strategy (AMS) can be implemented considering the impacts of the reevaluated seismic hazard. The assessment was performed in accordance with the guidance provided in Appendix H Section H.4.3.5 of NEI 12-06 Revision 4 (Reference 1) which was endorsed by Revision 2 to JLD-ISG-2012-01 (Reference 2). Formal NRC endorsement is pending review, thus SNC is taking an exception to the formally endorsed Revision 2 of NEI 12-06 to incorporate the elements of NEI 12-06 Revision 4 Appendix H.

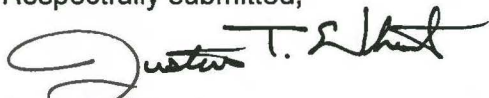
The Mitigating Strategies Seismic Hazard Information (MSSHI) is the licensee's reevaluated seismic hazard information at VEGP, developed using Probabilistic Seismic Hazard Analysis (PSHA). In response to the NRC's Request for Information Pursuant to Title 10 of the Code of Federal Regulations 50.54(f) 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, VEGP submitted the reevaluated seismic hazard information including the UHRS, GMRS and the hazard curves to the NRC on March 31, 2014 (Reference 3). The NRC staff concluded that the MSSHI that was submitted adequately characterizes the reevaluated seismic hazard for the site (Reference 5). Further, VEGP submitted the SPRA to the NRC on March 27, 2017 (Reference 4).

Based upon the mitigating strategies assessment in the Enclosure the mitigating strategies for VEGP considering the impacts of the reevaluated seismic hazard can be implemented as designed.

This letter contains no new Regulatory Commitments and no revision to existing Regulatory Commitments. If you have any questions, please contact Matt Euten at 205.992.7673.

I declare under penalty of perjury that the foregoing is true and correct. Executed on the 5th day of December 2017.

Respectfully submitted,



Justin T. Wheat  
Nuclear Licensing Manager  
Southern Nuclear Operating Company

JTW/MRE/GLS

Enclosure: NEI 12-06 Appendix H Path 5 Seismic MSA Report for VEGP – Units 1 and 2

U.S. Nuclear Regulatory Commission

NL-17-1889

Page 3

cc: Regional Administrator, Region II  
NRR Project Manager – Vogtle 1 & 2  
Senior Resident Inspector – Vogtle 1 & 2  
State of Georgia Environmental Protection Division  
RType: CVC7000

Vogtle Electric Generating Plant – Units 1 and 2  
NEI 12-06, Rev 4, Appendix H, H.4.5, Path 5: GMRS > 2xSSE  
Mitigating Strategies Assessment (MSA) Seismic

Enclosure

NEI 12-06 Appendix H Path 5 Seismic MSA Report for VEGP – Units 1 and 2

(2 pages)



### Mitigating Strategies Assessment

The purpose of this Mitigating Strategies Assessment is to evaluate and demonstrate that Vogtle Electric Generating Plant Units 1 and 2 (VEGP) can mitigate the effects of the reevaluated seismic hazard information developed pursuant to the NRC's 10 CFR 50.54(f) letter dated March 12, 2012. The assessment was performed in accordance with the guidance provided in Reference 1. Reference 1 discusses a method to develop an alternate mitigating strategy (AMS) to address the mitigating strategies seismic hazard information (MSSHI). Reference 2 provides an NRC staff position that the method described in Section H.4.5 of Reference 1 for an AMS is acceptable for mitigating a beyond-design-basis external event.

The risk-informed assessment described in H.4.5.3 of Reference 1 uses the SPRA to address the impacts of the MSSHI on the plant. Consistent with Section H.4.5.3 of Reference 1, the VEGP base SPRA (Reference 4) has been submitted to NRC for review and has been peer reviewed in accordance with the expectations set forth in Reference 6.

The results of the SPRA for VEGP are:  $2.8 \times 10^{-6}$ /yr. seismic core damage frequency (SCDF) and  $3.3 \times 10^{-7}$ /yr. seismic large early release frequency (SLERF). These results are less than  $5 \times 10^{-5}$ /yr. SCDF and  $5 \times 10^{-6}$ /yr. SLERF, therefore in accordance with H.4.5.3, the base SPRA results demonstrate that mitigating strategies are reasonably protected for the MSSHI and an evaluation under H.4.5.2, H.4.5.4, or H.4.5.5 is not required.

### Spent Fuel Pool Cooling Evaluation

The evaluation of spent fuel pool (SFP) cooling for VEGP was performed based on the initial conditions established in NEI 12-06 for SFP cooling coping in the event of an Extended Loss of A/C Power (ELAP) / Loss of normal access to the Ultimate Heat Sink (LUHS). The evaluation also used the results of pool heat up analyses from the ELAP evaluation as input.

For Phase 1 SFP cooling, VEGP credits the large inventory and heat capacity of the water in the SFP. Following the loss of SFP cooling, the SFP will slowly heat up and eventually begin to boil. Using the most limiting non-outage, normal decay heat load and SFP starting temperature, the SFP would begin to boil in approximately 14.14 hours after the loss of SFP cooling with the level reaching 15 feet above the fuel in approximately 55.21 hours. The VEGP initial coping strategy for SFP cooling is to allow evaporative cooling of the SFP while monitoring SFP level using instrumentation installed as required by NRC Order EA-12-051.

For Phase 2 SFP cooling, VEGP has developed three baseline SFP cooling strategies, but the first method relies on using a flexible hose directly from the discharge of the portable pump to the pool so no discussion of the other two strategies are included in this assessment. The hoses will be deployed inside the fuel handling building prior to the SFP reaching 200°F in order to minimize the need for personnel access to the SFP area, which may have degraded environmental conditions during an ELAP.

The permanently installed plant equipment relied on for the implementation of the SFP Cooling FLEX strategy has been designed and installed, or evaluated to remain functional, in accordance

with the plant design basis to the SSE loading conditions. The spent fuel pool integrity evaluations demonstrated inherent margins of the spent fuel pool structure and interfacing plant equipment above the SSE to the GMRS level (Reference 7).

The NRC has issued their Safety Evaluation of the VEGP Final Integrated Plan (FIP) (Reference 9) and concluded that VEGP has developed guidance that if implemented appropriately should maintain or restore SFP cooling following an ELAP consistent with NEI 12-06 guidance as endorsed by JLD-ISG-2012-01, and should adequately address the requirements of the order. A subsequent revision of the VEGP FIP (Reference 10) did not change the SFP cooling strategy and did not require NRC prior approval.

### Conclusion

The mitigating strategies for VEGP Units 1 and 2 considering the impacts of the reevaluated seismic hazard can be implemented as designed.