



UNITED STATES  
NUCLEAR REGULATORY COMMISSION

WASHINGTON, D.C. 20555-0001

September 1, 2016

Vice President, Operations  
Entergy Operations, Inc.  
Grand Gulf Nuclear Station  
P.O. Box 756  
Port Gibson, MS 39150

**SUBJECT: GRAND GULF NUCLEAR STATION, UNIT 1 – STAFF REVIEW OF MITIGATION STRATEGIES ASSESSMENT REPORT OF THE IMPACT OF THE REEVALUATED SEISMIC HAZARD DEVELOPED IN RESPONSE TO THE MARCH 12, 2012, 50.54(f) LETTER (CAC NO. MF7832)**

Dear Sir or Madam:

The purpose of this letter is to provide the U.S. Nuclear Regulatory Commission's (NRC) assessment of the seismic hazard mitigation strategies assessment (MSA), as described in the August 24, 2016, letter (Agencywide Documents Access and Management System (ADAMS) Accession No. ML16238A281), submitted by Entergy Operations, Inc. (Entergy, the licensee) for Grand Gulf Nuclear Station, Unit 1, (GGNS). The mitigation strategies assessment confirms that the licensee has adequately addressed the reevaluated seismic hazard within its mitigating strategies for beyond-design-basis external events.

**BACKGROUND**

By letter dated March 12, 2012 (ADAMS Accession No. ML12053A340), the NRC issued a request for information pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR), Section 50.54(f) (hereafter referred to as the 50.54(f) letter). The 50.54(f) letter 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 licensees reevaluate the seismic hazard using present-day methodologies and guidance. Concurrent with the reevaluation of seismic hazards, the NRC issued Order EA-12-049, "Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events," (ADAMS Accession No. ML12054A736). The order requires holders of operating power reactor licenses and construction permits issued under 10 CFR Part 50 to develop, implement, and maintain guidance and strategies to maintain or restore core cooling, containment, and spent fuel pool cooling following a beyond-design-basis external event.

By letter dated March 31, 2014 (ADAMS Accession No. ML14090A098), the licensee provided its reevaluated seismic hazard for GGNS in response to the 50.54(f) letter.

On December 10, 2015 (ADAMS Accession No. ML16005A621), the Nuclear Energy Institute (NEI) submitted Revision 2 to NEI 12-06, including guidance for mitigating strategies assessments regarding reevaluated hazard information. The NRC subsequently endorsed NEI 12-06, Revision 2, with exceptions, clarifications, and additions, in Japan Lessons-Learned Division (JLD) 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. ML15357A163).

#### MITIGATION STRATEGIES ASSESSMENT

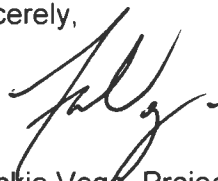
By letter dated December 18, 2015 (ADAMS Accession No. ML15348A379), the NRC staff documented its review of the licensee's reevaluated seismic hazard, also referred to as the mitigating strategies seismic hazard information. The staff confirmed the licensee's conclusion that its reevaluated seismic hazard is bounded by the current design-basis at all frequencies above 1 Hertz. In addition, the staff concluded that the Ground Motion Response Spectrum determined by the licensee adequately characterizes the reevaluated seismic hazard for the GGNS site.

The licensee stated that the GGNS MSA was performed consistent with NEI 12-06, Revision 2. Appendix H of NEI 12-06, Revision 2, describes acceptable methods for demonstrating that the reevaluated seismic hazard is addressed within the GGNS mitigating strategies for beyond-design-basis external events. The NRC staff confirmed that the licensee's seismic hazard MSA is consistent with the guidance in Appendix H.4.1 of NEI 12-06, Revision 2, as endorsed by JLD-ISG-2012-01, Revision 1. Therefore, the methodology used by the licensee is appropriate to perform an assessment of the mitigation strategies that addresses the reevaluated seismic hazard.

The NRC staff has reviewed the seismic hazard MSA for GGNS. The NRC staff concludes that sufficient information has been provided to demonstrate that the licensee's plans for the development and implementation of guidance and strategies under Order EA-12-049 appropriately address the reevaluated seismic hazard information stemming from the 50.54(f) letter.

If you have any questions, please contact me at (301) 415-1617 or via e-mail at [Frankie.Vega@nrc.gov](mailto:Frankie.Vega@nrc.gov).

Sincerely,

A handwritten signature in black ink, appearing to read 'Frankie Vega', with a horizontal line extending from the end of the signature.

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

Docket No. 50-416

cc: Distribution via Listserv

If you have any questions, please contact me at (301) 415-1617 or via e-mail at Frankie.Vega@nrc.gov.

Sincerely,

/RA/

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

Docket No. 50-416

cc: Distribution via Listserv

**DISTRIBUTION:**

PUBLIC  
JHMB R/F  
RidsNrrDorILPL4-2 Resource  
RidsNrrPMGrandGulf Resource  
RidsNrrLASLent Resource  
RidsAcrsAcnw\_MailCTR Resource

FVega, NRR  
BTitus, NRR  
EBowman, NRR

**ADAMS Accession No. ML16244A080**

**\* via e-mail**

<b>OFFICE</b>	NRR/JLD/JHMB/PM	NRR/JLD/LA	NRR/JLD/JHMB/BC(A)	NRR/JLD/JHMB/PM
<b>NAME</b>	FVega	SLent	GBowman (EBowman for)	FVega
<b>DATE</b>	09/01/2016	09/01/2016	09/01/2016	09/01/2016

**OFFICIAL RECORD COPY**