



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

March 19, 2018

LICENSEE: Entergy Operations, Inc.

FACILITY: Grand Gulf Nuclear Station, Unit 1

SUBJECT: SUMMARY OF MARCH 6, 2018, PUBLIC MEETING WITH ENTERGY OPERATIONS, INC., TO DISCUSS UPCOMING LICENSE AMENDMENT REQUEST REGARDING REACTOR POWER MEASUREMENT FOR GRAND GULF NUCLEAR STATION, UNIT 1 (EPID L-2018-LRM-0004)

On March 6, 2018, the U.S. Nuclear Regulatory Commission (NRC) staff held a Category 1 public meeting with staff from Entergy Operations, Inc. (Entergy, the licensee) at NRC Headquarters, One White Flint North, 11555 Rockville Pike, Rockville, Maryland. The purpose of the meeting was to discuss the licensee's upcoming license amendment request (LAR) regarding the use of power range neutron monitoring system (PRNMS) signals in lieu of turbine first stage pressure (TFSP) signals for measuring reactor power for Grand Gulf Nuclear Station, Unit 1 (GGNS). The meeting notice and agenda, dated February 23, 2018, are available in Agencywide Documents Access and Management System (ADAMS) at Accession No. ML18054A080. The enclosure to this document contains the meeting attendance list. The licensee provided slides for this public meeting, which are available in ADAMS at Accession No. ML18059A010.

Entergy presented a discussion of the plant operating history, which included a summary of the safety-related and nonsafety-related functions that were originally supported by the TFSP signals. These signals provided an indirect measurement of plant reactor power level. This was followed by a description of the PRNMS/Average Power Range Monitoring (APRM) subsystem at GGNS. The APRM subsystem was upgraded to a General Electric Hitachi (GEH) Nuclear Measurement and Analysis Control based digital PRNMS in 2018.

Entergy then presented a discussion of the TFSP operating experience between 1995 and 2014. The plant has experienced several instrument line failures during this time, which have resulted in numerous operating challenges including steam leaks, loss of instrument functionality, and a reactor scram. The operating experience also shows that TFSP failures have continued to occur despite several modifications to improve the system design and improve system performance.

In 2014, Entergy modified the TFSP design by replacing the input signal from the TFSP transmitters with a reactor power signal from the PRNMS system. New signal converters were installed in the control room to generate reactor power signals compatible with the existing TFSP input circuits. This modification was performed using the Title 10 of the *Code of Federal Regulations*, Section 50.59 change process and the licensee originally determined that a license amendment was not required. However, in a subsequent inspection, the NRC determined the licensee had incorrectly determined that prior NRC approval for this modification was not

needed. As a result, the NRC issued a Severity Level IV Non Cited Violation for failure to obtain prior NRC approval of the modification. To remedy this situation, the licensee plans to submit an LAR to the NRC, which requests approval of the installed modification to the TFSP functions.

The NRC staff asked about setpoint calculations associated with the modification. Though no setpoint changes are being proposed, the new PRNMS signals presumably have different accuracies and uncertainty factors than the TFSP signals they are replacing. Therefore, the NRC staff will need to verify that appropriate margins to the existing setpoints are being maintained in order to provide reasonable assurance that analytical safety limits will not be exceeded. To support such an evaluation, the NRC will need to either perform an audit of the associated calculations or review a summary of calculation changes made, if such is provided, in support of the LAR.

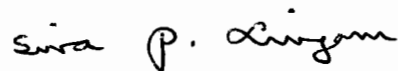
The NRC staff also identified that the forthcoming evaluation will include an assessment of diversity and defense-in-depth analysis. The licensee indicated that a GEH report would be included in the LAR which would address the criteria of Branch Technical Position 7-19 as it relates to the modification to replace the TFSP instrumentation with the APRMS signals.

The licensee agreed to confirm that the core operating limits report in the Technical Specifications was not affected as a result of the fact that different methodologies would be used to calculate instrument setpoints.

A proposed schedule for submittal and LAR evaluation activities was then presented and the NRC staff agreed that the proposals appear to be achievable, provided the information in the LAR submittal was reasonably complete.

There was no public participation at this public meeting. The NRC did not receive any public meeting feedback forms.

If you have any questions, please contact me at (301) 415-1564 or via e-mail at Siva.Lingam@nrc.gov.



Siva P. Lingam, Project Manager
Plant Licensing Branch IV
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-416

Enclosure:
List of Attendees

cc: Listserv

LIST OF ATTENDEES

MARCH 6, 2018, PUBLIC MEETING WITH ENTERGY OPERATIONS, INC.

REGARDING REACTOR POWER MEASUREMENT LICENSE AMENDMENT REQUEST

GRAND GULF NUCLEAR STATION, UNIT 1

Siva P. Lingam	U.S. Nuclear Regulatory Commission (NRC)
Richard Stattel	NRC
Muhammad Razzaque	NRC
Jerome Bettle*	NRC
Jason Kozal*	NRC
Doug Neve	Entergy Operations, Inc. (Entergy)
James Hallenbeck	Entergy
Steve Wideman	Entergy Consultant
Frank Novak*	General Electric-Hitachi (GEH)
Sean Miers*	GEH
Lisa Schichlein*	GEH

*participated via phone

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ADAMS Accession Nos.:
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Meeting Slides ML18059A010
Meeting Summary ML18067A379

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DATE	03/13/18	03/16/18	03/19/18	

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