



Entergy Operations, Inc.  
P. O. Box 756  
Port Gibson, MS 39150

Kevin J. Mulligan  
Site Vice President  
Grand Gulf Nuclear Station  
Tel. (601) 437-7500

GNRO-2014/00013

February 28, 2014

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

SUBJECT: Entergy's Second Six-Month Status Report in Response to March 12, 2012 Commission Order Modifying Licenses with Regard to Reliable Spent Fuel Pool Instrumentation (Order Number EA-12-051)  
Grand Gulf Nuclear Station, Unit 1  
Docket No. 50-416  
License No. NPF-29

REFERENCES: 1. NRC Order Number EA-12-051, *Order to Modify Licenses with Regard to Reliable Spent Fuel Pool (SFP) Instrumentation*, dated March 12, 2012 (ML12054A682)

2. Entergy Letter to NRC, *Overall Integrated Plan in Response to March 12, 2012, Commission Order Modifying License with Regard to Reliable Spent Fuel Pool Instrumentation (Order Number EA-12-051)*, dated February 26, 2013 (GNRO-2013/00016, ML13064A417)

Dear Sir or Madam:

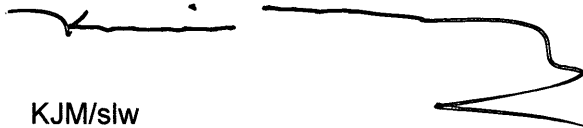
On March 12, 2012, the U.S. Nuclear Regulatory Commission (NRC) issued an order (Reference 1) to Entergy Operations, Inc. (Entergy). Reference 1 was immediately effective and directs Entergy to install reliable spent fuel pool level instrumentation.

Reference 1 requires submission of a status report at six-month intervals following submittal of the overall integrated plan (Reference 2). The purpose of this letter is to provide the second six-month status report pursuant to Section IV, Condition C.2, of Reference 1, that delineates progress made in implementing the requirements of Reference 1. The attached report provides an update of milestone accomplishments since the last status report, including any changes to the compliance method, schedule, or need for relief and the basis, if any.

This letter contains no new regulatory commitments. Should you have any questions regarding this submittal, please contact Mr. Jeffery A. Seiter, Acting Regulatory Assurance Manager, at (601) 437-2344.

I declare under penalty of perjury that the foregoing is true and correct; executed on February 28, 2014.

Sincerely,



A handwritten signature in black ink, appearing to be 'KJM/sw', with a long horizontal stroke extending to the right and a small flourish at the end.

KJM/sw

Attachment: Grand Gulf Nuclear Station's Second Six Month Status Report for the Implementation of Order EA-12-051, Order Modifying Licenses with Regard to Requirements for Reliable Spent Fuel Pool Instrumentation

cc: U. S. Nuclear Regulatory Commission  
ATTN: Steven A. Reynolds  
Acting Regional Administrator, Region IV  
1600 East Lamar Boulevard  
Arlington, TX 76011-4511

U. S. Nuclear Regulatory Commission  
Attn: Director, Office of Nuclear Reactor Regulation  
Washington, DC 20555-0001

U. S. Nuclear Regulatory Commission  
ATTN: Mr. Alan Wang, NRR/DORL  
Mail Stop OWFN/8 B1  
Washington, DC 20555-0001

NRC Senior Resident Inspector  
Grand Gulf Nuclear Station  
Port Gibson, MS 39150

**Attachment to GNRO-2014/00013**

**Grand Gulf Nuclear Station's Second Six Month Status Report for the Implementation of  
Order EA-12-051, Order Modifying Licenses with Regard to Requirements for Reliable  
Spent Fuel Pool Instrumentation**

**Grand Gulf Nuclear Station's  
Second Six Month Status Report for the Implementation of Order EA-12-051, Order  
Modifying Licenses with Regard to Requirements for Reliable Spent Fuel Pool  
Instrumentation**

## 1 Introduction

Grand Gulf Nuclear Station (GGNS) developed an Overall Integrated Plan (Reference 1 in Section 8), documenting the requirements to install reliable spent fuel pool level instrumentation (SFPI), in response to Reference 2. This attachment provides an update of milestone accomplishments since the last status report, including any changes to the compliance method, schedule, or need for relief/relaxation and the basis, if any.

## 2 Milestone Accomplishments

The following milestone(s) have been completed since August 15, 2013 and are current as of January 31, 2014:

- Respond to NRC RAIs (received July 30, 2013)
- Although not part of the original milestone schedule, an Interim Staff Evaluation (ISE) was received November 25, 2013 (Reference 3). The ISE contains 19 requests for additional information (RAIs) that are due September 30, 2015. NRC staff clarified during the November 26, 2013 public meeting that the Interim Staff Evaluation (ISE) questions supersede any previous requests for information issued by the staff concerning the spent fuel pool instrumentation (Reference 4). Therefore, the RAIs dated July 30, 2013 (Reference 5) are considered superseded by the RAIs contained in the ISE.

## 3 Milestone Schedule Status

The following provides an update to the schedule identified in Section 2 of the Overall Integrated Plan. It provides the activity status of each item, and whether the expected completion date has changed. The dates are planning dates subject to change as design and implementation details are developed.

Milestone	Target Completion Date	Activity Status	Revised Target Completion Date
Install reliable SFPI	Spring 2016 Refueling Outage	Not started	N/A
Respond to NRC RAIs (received July 30, 2013)	August 29, 2013	Submitted August 29, 2013	N/A
Respond to ISE RAIs (received November 25, 2013)	September 30, 2015	See Section 6	N/A

#### **4 Changes to Compliance Method**

There are no changes to the compliance method as documented in the Overall Integrated Plan (Reference 1).

#### **5 Need for Relief/Relaxation and Basis for the Relief/Relaxation**

GGNS expects to comply with the order implementation date and no relief/relaxation is required at this time.

#### **6 Open Items from Overall Integrated Plan and Interim Staff Evaluation**

As discussed in Section 2, GGNS has received an Interim Staff Evaluation that includes 19 RAIs. Responses to the RAIs are due by September 30, 2015 and are provided in Section 9 of this six-month status report. The following table provides a status of any RAIs documented in the Interim Staff Evaluation.

<b>RAI #</b>	<b>Response Status</b>
1	In Progress
2	In Progress
3	In Progress
4	In Progress
5	In Progress
6	In Progress
7	In Progress
8	In Progress
9	In Progress
10	In Progress
11	In Progress
12	In Progress
13	In Progress
14	In Progress
15	In Progress
16	In Progress
17	In Progress
18	In Progress
19	In Progress

#### **7 Potential Interim Evaluation Impacts**

There are no potential impacts to the Interim Staff Evaluation identified at this time except for those identified in Section 6.

## 8 References

The following references support the updates to the Overall Integrated Plan described in this Attachment.

1. "Overall Integrated Plan in Response to March 12, 2012, Commission Order Modifying License with Regard to Reliable Spent Fuel Pool Instrumentation (Order Number EA-12-051)," dated February 26, 2013 (GNRO-2013/00016, ML13059A316).
2. NRC Order Number EA-12-051, "Order Modifying Licenses with Regard to Reliable Spent Fuel Pool Instrumentation," dated March 12, 2012 (ML12054A735).
3. "Grand Gulf Nuclear Station, Unit 1 – Interim Staff Evaluation and Request for Additional Information Regarding Overall Integrated Plan for Reliable Spent Fuel Pool Instrumentation (Order Number EA-12-051) (TAC NO. MF0955)," dated November 25, 2013 (ML13316B986).
4. "Summary of the November 26, 2013, Public Meeting to Discuss Industry Responses to Staff Interim Evaluations for Spent Fuel Pool Instrumentation," dated December 26, 2013 (ML13347B030).
5. "Request for Additional Information Regarding Overall Integrated Plan for Reliable Spent Fuel Pool Instrumentation (Order EA-12-051)," dated July 30, 2013 (GNRI-2013/00129).

## **9 Responses to the Interim Staff Evaluation Requests for Addition Information**

### **RAI #1**

**Please provide information on specific procedures controlling irradiated hardware stored in the SFP. Include details of any analysis performed to determine the projected dose rate impact and the appropriate Level 2 elevation as a result of dose from irradiated material stored in the SFP.**

This response will be provided in a future update.

### **RAI #2**

**Please provide a clearly labeled sketch or marked-up plant drawing depicting the proposed routing of the cables that will extend from the SFP sensors toward the location of the read-out/display device in the computer and control panel room.**

This response will be provided in a future update.

### **RAI #3**

**Please provide the results of the analyses used to verify the design criteria and methodology for seismic testing of the SFP instrumentation and the electronics units, including design basis maximum seismic loads and the hydrodynamic loads that could result from pool sloshing or other effects that could accompany such seismic forces.**

This response will be provided in a future update.

### **RAI #4**

**For each of the mounting attachments required to fasten SFP level equipment to plant structures, please describe the design inputs, and the methodology that was used to qualify the structural integrity of the affected structures/equipment.**

This response will be provided in a future update.

### **RAI #5**

**Please provide further information describing how other material stored in the SFP will not create adverse interaction with the SFP level instruments.**

This response will be provided in a future update.

**RAI #6**

**Please provide analysis of the maximum expected radiological conditions (dose rate and total integrated dose) to which the sensor electronics (including power boxes, signal processors, and display panels) will be exposed. Provide documentation indicating the maximum total integrated dose the sensor electronics can withstand and how it was determined. Discuss the time period over which the analyzed total integrated dose was applied.**

This response will be provided in a future update.

**RAI #7**

**Please provide information indicating (a) the temperature ratings and whether the temperature ratings for the system electronics are continuous duty ratings; and (b) the maximum expected ambient temperature in the rooms in which the system electronics will be located under BDB conditions, which include no AC power available to run Heating, Ventilation, and Air Conditioning (HVAC) systems.**

This response will be provided in a future update.

**RAI #8**

**Please provide information indicating the maximum expected relative humidity in the room in which the sensor electronics will be located under BDB conditions, in which there is no ac power available to run HVAC systems, and whether the sensor electronics is capable of continuously performing required functions under this expected humidity condition.**

This response will be provided in a future update.

**RAI #9**

**Please provide a description of the specific method or combination of methods to be applied to demonstrate the reliability of the permanently installed equipment under BDB shock and vibration conditions.**

This response will be provided in a future update.

**RAI #10**

**For RAI #9 above, please provide the results for the selected methods, tests, and analyses used to demonstrate the qualification and reliability of the installed equipment in accordance with the Order requirements.**

This response will be provided in a future update.



**RAI #11**

**Please provide analysis of the vendor analysis and seismic testing results to show that instrument performance reliability, following exposure to simulated seismic conditions representative of the environment anticipated for the SFP structures at GGNS, has been adequately demonstrated.**

This response will be provided in a future update.

**RAI #12**

**Please provide the NRC staff with the final configuration of the power supply source for each channel so the staff may conclude the two channels are independent from a power supply assignment perspective.**

This response will be provided in a future update.

**RAI #13**

**Please provide the results of the calculation depicting battery backup duty cycle requirements, demonstrating that battery capacity is sufficient to maintain the level indication function until offsite resource availability is reasonably assured.**

This response will be provided in a future update.

**RAI #14**

**Please provide analysis verifying the proposed instrument performance is consistent with these estimated accuracy normal and BDB values. Demonstrate that the channels will retain these accuracy performance values following a loss of power and subsequent restoration of power.**

This response will be provided in a future update.

**RAI #15**

**Please provide a description of the methodology that will be used for determining the maximum allowed deviation from the instrument channel design accuracy under normal operating conditions. The NRC staff understands this allowed deviation will serve as an acceptance criterion for a calibration procedure to alert operators and technicians that the channel requires adjustment to within normal design accuracy.**

This response will be provided in a future update.

**RAI #16**

**Please provide a description of the in-situ calibration process at the SFP location that will result in the channel calibration being maintained at its design accuracy.**

This response will be provided in a future update.

**RAI #17**

**Please describe the evaluation used to validate that the display location can be accessed without unreasonable delay following a BDB event. Include the time available for personnel to access the display as credited in the evaluation, as well as the actual time (e.g., based on walk-throughs) that it will take for personnel to access the display. Additionally, include a description of the radiological and environmental conditions on the paths personnel might take. Describe whether the display location remains habitable for radiological, heat and humidity, and other environmental conditions following a BDB event. Describe whether personnel are continuously stationed at the display or monitor the display periodically.**

This response will be provided in a future update.

**RAI #18**

**Please provide a list of the procedures addressing operation (both normal and abnormal response), calibration, test, maintenance, and inspection that will be developed for use of the SFP instrumentation. The licensee is requested to include a brief description of the specific technical objectives to be achieved within each procedure.**

This response will be provided in a future update.

**RAI #19**

**Please provide further information describing the maintenance and testing program the licensee will establish and implement to ensure that regular testing and calibration is performed and verified by inspection and audit to demonstrate conformance with design and system readiness requirements. Include a description of plans to ensure necessary channel checks, functional tests, periodic calibration, and maintenance will be conducted for the level measurement system and its supporting equipment.**

This response will be provided in a future update.