



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-2014/00060

August 26, 2014

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

SUBJECT: Entergy's Third Six-Month Status Report in Response to March 12, 2012 Commission Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events (Order Number EA-12-049)
Grand Gulf Nuclear Station, Unit 1
Docket No. 50-416
License No. NPF-29

- REFERENCES:
1. NRC Order Number EA-12-049, *Order to Modify Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events*, dated March 12, 2012 (ML12054A735)
 2. Entergy Letter to NRC, *Overall Integrated Plan in Response to March 12, 2012, Commission Order Modifying License with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events (Order Number EA-12-049)*, dated February 27, 2013 (GNRO-2013/00015, ML13059A316)
 3. Entergy Letter to NRC, *Entergy's First Six-Month Status Report in Response to March 12, 2012 Commission Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events (Order Number EA-12-049)*, dated August 28, 2013 (GNRO-2013/0060, ML13240A264)
 4. Entergy Letter to NRC, *Entergy's Second Six-Month Status Report in Response to March 12, 2012 Commission Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events (Order Number EA-12-049)*, dated February 28, 2014 (GNRO-2014/00011, ML14059A080)

Dear Sir or Madam:

On March 12, 2012, the Nuclear Regulatory Commission ("NRC" or "Commission") issued an order (Reference 1) to Entergy. Reference 1 was immediately effective and directs Entergy to develop, implement, and maintain guidance and strategies to maintain or restore core cooling, containment, and spent fuel pool cooling capabilities in the event of a beyond-design-basis external event.

Reference 1 requires submission of a status report at six-month intervals following submittal of the overall integrated plan (Reference 2). References 3 and 4 provided the first and second six-month status reports. The purpose of this letter is to provide the third 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. James J. Nadeau, Regulatory Assurance Manager, at (601) 437-2103.

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

Sincerely,



KJM/ras

Attachment: Grand Gulf Nuclear Station's Third Six Month Status Report for the Implementation of Order EA-12-049, Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events

cc: U. S. Nuclear Regulatory Commission
ATTN: Kriss Kennedy
Deputy 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

U. S. Nuclear Regulatory Commission
ATTN: Jessica A. Kratchman
Mail Stop OWFN/9 D2
Washington, DC 20555-0001

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

Attachment to GNRO-2014/00060

**Grand Gulf Nuclear Station's Third Six Month Status Report for the
Implementation of Order EA-12-049, Order Modifying Licenses with Regard to
Requirements for Mitigation Strategies for Beyond-Design-Basis External Events**

**Grand Gulf Nuclear Station's
Third Six-Month Status Report for the Implementation of Order EA-12-049,
Order Modifying Licenses with Regard to Requirements for Mitigation
Strategies for Beyond-Design-Basis External Events**

1 Introduction

Grand Gulf Nuclear Station (GGNS) developed an Overall Integrated Plan (Reference 1), documenting the diverse and flexible strategies (FLEX), in response to Reference 2. This attachment provides an update of milestone accomplishments since submittal of the Overall Integrated Plan, 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 the development of the Overall Integrated Plan (Reference 1), and are current as of August 20, 2014:

- Submit Six-Month Status Report 1 – August 2013
- Submit Six-Month Status Report 2 —February 2014
- Submit Six-Month Status Report 3 — Complete with submission of this document in August 2014

3 Milestone Schedule Status

The following provides an update to Attachment 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.

Target completion dates have been added to the following milestones for which no dates were previously included:

- Perform Staffing Analysis
- Purchase
- Procure
- Develop Strategies / Contract with NSRC
- Issue GG FSGs
- Create Maintenance Procedures
- Procedure Changes Training Material Complete
- Develop Training Plan
- Implement Training

These milestone target dates do not impact the Order implementation date.

Milestone	Target Completion Date[†]	Activity Status	Revised Target Completion Date
Submit 60 Day Status Report	Oct 2012	Complete	
Submit Overall Integrated Plan	Feb 2013	Complete	
Submit Six-Month Updates:			
Report 1	Aug 2013	Complete	
Report 2	Feb 2014	Complete	
Report 3	Aug 2014	Complete	
Report 4	Feb 2015	Not Started	
Report 5	Aug 2015	Not Started	
Report 6	Feb 2016	Not Started	
Report 7	Deleted	Deleted	Deleted*
Perform Staffing Analysis		Not Started	July 2015
Modifications			
Develop Mods (Design Start)	May 2014	Complete	
Develop Strategies	Nov 2014	Started	
Develop Mods (Design Complete)	Nov 2014	Not Started	
Implementation Outage**	Mar 2016	Not Started	
Implement Mods	Mar 2016	Not Started	
On-site FLEX Equipment			
Purchase		Started	Feb 2015
Procure		Started	Dec 2015
Off-site FLEX Equipment			
Develop Strategies / Contract with NSRC		Started	July 2015
Procedures			
Issue GG FSGs		Not Started	May 2015
Create Maintenance Procedures		Not Started	June 2015
Procedure Changes Training Material Complete		Not Started	May 2015
Training			
Develop Training Plan		Not Started	March 2015
Implement Training		Not Started	Feb 2016

Milestone	Target Completion Date[†]	Activity Status	Revised Target Completion Date
Validation / Demonstration	Mar 2016	Not Started	
Submit Completion Report	Aug 2016	Not Started	

*Deleted due to Completion Report being submitted in August 2016.

**Full compliance since second refueling outage is before 12/31/2016.

[†]Target Completion Date is the last submitted date from either the overall integrated plan or previous six-month status report.

4 Changes to Compliance Method

In preparation for the design phase of the FLEX project at GGNS, changes have been identified to the compliance strategies as described in the original OIP (Reference 1). The significant changes are described below. The changes will be incorporated into a future or the final OIP update.

- The Phase 2 core cooling and containment integrity strategy described on Pages 17 and 31 of the OIP was based on a “feed and bleed” approach with water feeding the reactor via FLEX pumps drawing from the Ultimate Heat Sink (UHS) and the alternate decay heat removal (ADHR) pumps bleeding suppression pool water back to the UHS. Entergy has revised the Phase 2 strategy to a “feed and vent” strategy. The revised strategy maintains feeding coolant to the vessel for core cooling in the same manner, but replaces the bleeding of suppression pool water back to the UHS with venting of steam through the containment vent path. Neither the ADHR nor the suppression pool makeup systems are used as part of the simplified response for the revised “feed and vent” strategy.
- The Phase 2 core cooling discussion on Page 17 of the OIP states that the FLEX pump discharge connection will be made to the High Pressure Core Spray (HPCS) Service Water (SW) piping inside the Standby Service Water (SSW) pump house via connection points on the side of the pump house. The FLEX pump discharge connection will now be made in the seismically qualified, missile protected HPCS SW return line in SSW Valve Room A instead.
- The FLEX Phase 3 strategy for core cooling and containment integrity as described on pages 24 and 35 of the OIP has been revised. The original primary Phase 3 strategy utilizes Residual Heat Removal (RHR) in alternate shutdown cooling mode powered from a National SAFER Resource Center (NSRC) portable diesel powered generator (PDG) connected to the Division 2 safety related 4160V bus and supplying the RHR B heat exchanger with service water from NSRC pumps. NSRC heat removal equipment was to be used to cool the return water from the RHR heat exchanger before being discharged to the UHS. The original alternate strategy maintained the Phase 2 equipment in service using Phase 3 NSRC equipment to cool and makeup to the UHS.

The revised Phase 3 primary strategy for core cooling and maintaining containment integrity is continued operation of the Phase 2 “feed and vent”

strategy discussed in the first bullet above with offsite equipment used to makeup to the UHS. The plant recovery strategy will continue to rely on operation of RHR powered from a 4160V NSRC PDG connected to the Division 2 safety related bus with NSRC equipment providing service water flow. This will be accomplished by portable equipment and procedures rather than permanent plant modifications. In addition, with the revised Phase 2 strategy no longer reliant on bleeding suppression pool water to the UHS, the safety related, seismically qualified, missile protected SSW cooling towers will be utilized in lieu of NSRC heat removal equipment.

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

The following tables provide a summary and status of any open items documented in the Overall Integrated Plan and any open items or confirmatory items documented in the Interim Staff Evaluation (ISE). A fourth table includes a listing of Audit Questions and the status of each item.

Overall Integrated Plan Open Items		Status
1.	Structure, content and details of the National SAFER Resource Center (NSRC) Grand Gulf Response Plan will be determined.	Not Started

Interim Staff Evaluation Open Items		Status
3.1.2.A	Since the GGNS Probable Maximum Precipitation is greater than the grade elevation and sandbags are needed to protect against flooding, it is unclear how GGNS can be designated as a "dry" site. Since the licensee identified GGNS as a dry site, licensee information related to NEI 12-06 guidelines identified in this report, Sections 3.1.2.1, 3.1.2.2, and 3.1.2.3 (storage, deployment, and procedural interfaces, respectively) are not discussed. If the resolution of this Open Item results in GGNS not being categorized as a "dry" site, the guidelines of the NEI 12-06 Sections related to these report sections will need to be addressed by the licensee as part of that resolution.	This Open Item was addressed in Section 4 of GGNS's second six month FLEX status report (Reference 5 of section 8).

Interim Staff Evaluation Confirmatory Items		Status
3.1.1.1.A	Confirm that the storage facilities and plans will conform to the guidance in NEI 12-06, Section 5.3.1, for protection from seismic events.	This Confirmatory Item was addressed in Section 4 of GGNS's second six month FLEX status report (Reference 5 of section 8)
3.1.3.1.A	Confirm that at least one of the two FLEX equipment storage buildings would not be damaged by tornado missiles, based on the guidance in NEI 12-06, Section 7.3.1.	This Confirmatory Item was addressed in Section 4 of GGNS's second six month FLEX status report (Reference 5 of section 8)
3.1.3.2.A	Confirm that procedures address UHS usability when wind generated debris is present in the UHS.	In Progress This item will be addressed by update to AQ GGN-052 response when information is available
3.2.1.1.A	Confirm that the final Modular Accident Analysis Program Revision 4 (MAAP4) analysis of the RCS response conforms to the NEI position paper dated June 2013, entitled "Use of Modular Accident Analysis Program (MAAP) in Support of Post-Fukushima Applications" (ADAMS Accession Number ML13190A201) and the MAAP4 limitations of the NRC endorsement letter, dated October 3, 2013 (ADAMS Accession No. ML13275A318).	In Progress This item will be addressed by update to AQ GGN-019 response when information is available
3.2.1.2.A	Confirm that the MAAP4 analysis includes appropriate recirculation pump seal leakage.	In Progress This item will be addressed by update to AQ GGN-025 response when information is available
3.2.1.3.A	Confirm that the final Sequence of Events (SOE) reflects the results of the final MAAP4 analysis of the RCS response and the licensee provides reasonable assurance by some means (e.g. by walkthrough) that the timing of the actions in the SOE is achievable.	In Progress This item will be addressed by update to AQ GGN-026 response when information is available
3.2.1.4.A	Confirm that operation with the suppression pool temperature at its calculated maximum temperature will not impact the mitigation strategies, especially RCIC operation and structural integrity of the suppression pool.	In Progress This item will be addressed by update to AQ GGN-024 response when information is available

Interim Staff Evaluation Confirmatory Items		Status
3.2.1.8.A	Confirm that the hydraulic calculations for the FLEX pumps demonstrate that the required flow rates can be achieved.	In Progress This item will be addressed by update to AQ GGN-034 response when information is available
3.2.2.A	Confirm that the SFP area ventilation calculation demonstrates that portable ventilation is not required in the SFP area, or that the licensee provides a strategy to use portable ventilation.	In Progress This item will be addressed by update to AQ GGN-039 response when information is available
3.2.3.A	Confirm that the licensee's strategy for maintaining containment capabilities considers the results of the final MAAP4 analysis for RCS leakage and the containment venting strategy.	In Progress This item will be addressed by update to AQ GGN-026 response when information is available
3.2.4.2.A	Confirm that the RCIC room heat up calculation for ELAP uses appropriate heat loads and shows an acceptable room temperature.	In Progress This item will be addressed by update to AQ GGN-045 response when information is available
3.2.4.4.A	Confirm that any required upgrades to the site's communications systems have been completed, as noted in the NRC's review of the GGNS communications assessment (ADAMS Accession No. ML13129A132).	NRC Confirmatory Action
3.2.4.8.A	Confirm that the licensee's analyses for size and loading of FLEX generators shows acceptable results.	In Progress This item will be addressed by update to AQ GGN-034 response when information is available
3.2.4.8.B	Confirm that the licensee's final proposed connections of FLEX Phase 2 and 3 electrical equipment to the permanent plant equipment are acceptable.	In Progress This item will be addressed by update to AQ GGN-053 response when information is available
3.2.4.9.A	Confirm that the licensee has plans to refuel FLEX equipment based on the fuel oil consumption rates.	In Progress This item will be addressed by update to AQ GGN-055 response when information is available
3.2.4.10.A	Confirm the acceptability of RCIC operation without the gland seal compressor (de-energized 30 minutes after loss of all ac	In Progress This item will be addressed

Interim Staff Evaluation Confirmatory Items		Status
	power).	by update to AQ GGN-072 response when information is available
3.2.4.10.B	Confirm that the calculations regarding battery sizing which show that Vital Batteries can provide required loads for at least 11 hours (considering load shedding) are acceptable.	In Progress This item will be addressed by update to AQ GGN-031 response when information is available

Audit Questions	Status	Completion or Target Date
GGN-001	In Progress - This AQ response will be updated when information is available	Feb 2015
GGN-002	In Progress - This AQ response will be updated when information is available (ISE Confirmatory Item 3.1.1.1.A) [†]	Feb 2015
GGN-003	In Progress - This AQ response will be updated when information is available (ISE Confirmatory Item 3.1.3.1.A)	Feb 2015
GGN-005	Closed*	
GGN-007	Closed*	
GGN-008	Closed*	
GGN-010	In Progress - This AQ response will be updated when information is available	Feb 2015
GGN-011	Closed*	
GGN-012	Closed*	
GGN-013	Closed*	
GGN-014	Closed*	
GGN-015	In Progress - This AQ response will be updated when information is available	Feb 2015
GGN-016	In Progress - This AQ response will be updated when information is available	Feb 2015
GGN-017	In Progress- This AQ response will be updated when information is available	Feb 2015
GGN-019	In Progress - This AQ response will be updated when information is available (ISE Confirmatory Item 3.2.1.1.A)	Feb 2015
GGN-021	Closed*	

Audit Questions	Status	Completion or Target Date
GGN-022	Closed*	
GGN-023	Closed*	
GGN-024	In Progress - This AQ response will be updated when information is available (ISE Confirmatory Item 3.2.1.4.A)	Feb 2015
GGN-025	In Progress - This AQ response will be updated when information is available (ISE Confirmatory Item 3.2.1.2.A)	Feb 2015
GGN-026	In Progress - This AQ response will be updated when information is available (ISE Confirmatory Items 3.2.1.3.A and 3.2.3.A) [†]	Feb 2015
GGN-028	In Progress - This AQ response will be updated when information is available	Feb 2015
GGN-029	Closed*	
GGN-030	Closed*	
GGN-031	In Progress - This AQ response will be updated when information is available (ISE Confirmatory Item 3.2.4.10.B)	Feb 2015
GGN-034	In Progress - This AQ response will be updated when information is available (ISE Confirmatory Items 3.2.1.8.A and 3.2.4.8.A)	Feb 2015
GGN-036	Closed*	
GGN-038	Closed*	
GGN-039	In Progress - This AQ response will be updated when information is available (ISE Confirmatory Item 3.2.2.A)	Feb 2015
GGN-040	Closed*	
GGN-041	Closed*	
GGN-042	Closed*	
GGN-043	In Progress - This AQ response will be updated when information is available	Feb 2015
GGN-044	Closed*	
GGN-045	In Progress - This AQ response will be updated when information is available (ISE Confirmatory Item 3.2.4.2.A)	Feb 2015
GGN-046	In Progress - This AQ response will be updated when information is available	Feb 2015

Audit Questions	Status	Completion or Target Date
GGN-047	Closed*	
GGN-048	Closed*	
GGN-050	Closed*	
GGN-052	In Progress - This AQ response will be updated when information is available (ISE Confirmatory Item 3.1.3.2.A) [†]	Feb 2015
GGN-053	In Progress - This AQ response will be updated when information is available (ISE Confirmatory Item 3.2.4.8.B)	Feb 2015
GGN-055	In Progress - This AQ response will be updated when information is available (ISE Confirmatory Item 3.2.4.9.A)	Feb 2015
GGN-057	Closed*	
GGN-058	In Progress - This AQ response will be updated when information is available	Feb 2015
GGN-061	Closed*	
GGN-062	In Progress - This AQ response will be updated when information is available	Feb 2015
GGN-063	Closed*	
GGN-064	In Progress - This AQ response will be updated when information is available	Feb 2015
GGN-065	Closed*	
GGN-066	Closed*	
GGN-067	Closed*	
GGN-071	In Progress - This AQ response will be updated when information is available	Feb 2015
GGN-072	In Progress - This AQ response will be updated when information is available (ISE Confirmatory Item 3.2.4.10.A) [†]	Feb 2015

*Closed indicates that Entergy's response is complete.

[†]Question status changed to "in progress" due to potential impact of the associated ISE confirmatory item.

7 Potential Interim Staff Evaluation Impacts

There are no potential impacts to the Interim Staff Evaluation identified at this time except those identified in Section 4.

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 Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events (Order Number EA-12-049)," dated February 27, 2013 (GNRO-2013/00015, ML13059A316).
2. NRC Order Number EA-12-049, "Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events," dated March 12, 2012 (ML12054A735).
3. Entergy Letter to NRC, *Entergy's first Six-Month Status Report in Response to March 12, 2012 Commission Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events (Order Number EA-12-049)*, dated August 28, 2013 (GNRO-2013/00060, ML13240A264).
4. NRC Letter, "Grand Gulf Nuclear Station - Interim Staff Evaluation Relating to Overall Integrated Plan in Response to Order EA-12-049 (Mitigation Strategies) (TAC No. MF0954)," dated February 19, 2014 (ML14007A718).
5. Entergy Letter to NRC, *Entergy's Second Six-Month Status Report in Response to March 12, 2012 Commission Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events (Order Number EA-12-049)*, dated February 28, 2014 (GNRO-2014/00011, ML14059A080).