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GNRO-2015/00052

August 28, 2015

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

**SUBJECT:** Entergy's Fifth 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).
5. Entergy Letter to NRC, *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)*, dated August 26, 2014 (GNRO-2014/00060, ML14239A316).

- 6 Entergy Letter to NRC, *Entergy's Fourth 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 19, 2015 (GNRO-2015/00004, ML15054A537).

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, 4, 5 and 6 provided the first, second, third and fourth six-month status reports. The purpose of this letter is to provide the fifth 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, 2015.

Sincerely,



KJM/ras

Attachment: Grand Gulf Nuclear Station's Fifth 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: See next page

cc: U. S. Nuclear Regulatory Commission  
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NRC Senior Resident Inspector  
Grand Gulf Nuclear Station  
Port Gibson, MS 39150

**Attachment to GNRO-2015/00052**

**Grand Gulf Nuclear Station's Fifth 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 last status report (Reference7), 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 January 31, 2015, and are current as of July 31, 2015:

- Submit Six-Month Status Report 4 — February 2015
- Submit Six-Month Status Report 5 — Complete with submission of this document in August 2015
- Develop Mods (Design Complete) — Complete with submission of this document in August 2015 with ongoing design support throughout the implementation phase
- Develop Strategies / Contract with NSRC — Complete with submission of this document in August 2015 with the response plan final report issued in September 2015

## 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.

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

| Milestone                             | Target Completion Date <sup>†</sup> | Activity Status | Revised Target Completion Date |
|---------------------------------------|-------------------------------------|-----------------|--------------------------------|
| <b>Submit 60 Day Status Report</b>    | Oct 2012                            | Complete        |                                |
| <b>Submit Overall Integrated Plan</b> | Feb 2013                            | Complete        |                                |
| <b>Submit Six-Month Updates:</b>      |                                     |                 |                                |
| Report 1                              | Aug 2013                            | Complete        |                                |
| Report 2                              | Feb 2014                            | Complete        |                                |

| Milestone                                    | Target Completion Date <sup>†</sup> | Activity Status            | Revised Target Completion Date |
|--|-------------------------------------|----------------------------|--------------------------------|
| Report 3                                     | Aug 2014                            | Complete                   |                                |
| Report 4                                     | Feb 2015                            | Complete                   |                                |
| Report 5                                     | Aug 2015                            | Complete                   |                                |
| Report 6                                     | Feb 2016                            | Not Started                |                                |
| Report 7                                     | Deleted*                            | Deleted                    |                                |
| <b>Perform Staffing Analysis</b>             | July 2015                           | Started <sup>Note 1</sup>  | Oct 2015                       |
| <b>Modifications</b>                         |                                     |                            |                                |
| Develop Mods (Design Start)                  | May 2014                            | Complete                   |                                |
| Develop Strategies                           | Nov 2014                            | Complete                   |                                |
| Develop Mods (Design Complete)               | Mar 2015                            | Complete <sup>Note 2</sup> |                                |
| Implementation Outage**                      | Mar 2016                            | Not Started                |                                |
| Implement Mods                               | Mar 2016                            | Started                    |                                |
| <b>On-site FLEX Equipment</b>                |                                     |                            |                                |
| Purchase                                     | Feb 2015                            | Started                    | Sept 2015                      |
| Procure                                      | Dec 2015                            | Started                    |                                |
| <b>Off-site FLEX Equipment</b>               |                                     |                            |                                |
| Develop Strategies / Contract with NSRC      | July 2015                           | Complete <sup>Note 3</sup> | Sept 2015                      |
| <b>Procedures</b>                            |                                     |                            |                                |
| Issue GG FSGs                                | Mar 2016                            | Started <sup>†</sup>       |                                |
| Create Maintenance Procedures                | Oct 2015                            | Not Started                |                                |
| Procedure Changes Training Material Complete | Feb 2016                            | Not Started                |                                |
| <b>Training</b>                              |                                     |                            |                                |
| Develop Training Plan                        | March 2015                          | Started                    | Sept 2015                      |
| Implement Training                           | Feb 2016                            | Not Started                |                                |
| <b>Validation / Demonstration</b>            | Mar 2016                            | Not Started                |                                |
| <b>Submit Completion Report</b>              | 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.

<sup>†</sup>Target Completion Date is the last submitted date from either the overall integrated plan or previous six-month status report.

Note 1 – Onsite staffing analysis complete. Staffing analysis report will be issued to NRC October 2015.

Note 2 – Design support continues for any change during modification implementation, procedure development, or validation.

Note 3 – Onsite assessment complete. The GG Response Plan will be issued September 2015.

## 4 Changes to Compliance Method

In the continuing design development 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 480 VAC portable diesel generator size has changed to 300 kW. This is based on repowering the installed diesel fuel oil transfer pump for the fuel oil strategy as outlined in Section 4 of GGNS's second six month FLEX status report (Reference 5 of section 8) in addition to increasing the margin available to repower the station battery chargers.
- The OIP states that 6000 CFM of ventilation is provided to the main control room via the deployment of portable ventilation fans powered from a 120 VAC 3 kW portable diesel generator. The OIP text that states two 6000 CFM fans will be deployed is corrected and clarified to state that 6000 CFM of ventilation will be provided via one or more portable fans powered by a 5.5 kW portable diesel generator staged adjacent to the control building entrance as described in the OIP.

## 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. | Onsite assessment complete. The GG Response Plan will be issued September 2015. |

| <b>Interim Staff Evaluation Open Items</b> |   | <b>Status</b>  |
|--|---|--|
| 3.1.2.A                                    | <p>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.</p> | <p>This Open Item was addressed in Section 4 of GGNS's second six month FLEX status report (Reference 5 of section 8).</p> |

| <b>Interim Staff Evaluation Confirmatory Items</b> |  | <b>Status</b>   |
|--|--|---|
| 3.1.1.1.A  | <p>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.</p>   | <p>This Confirmatory Item was addressed in Section 4 of GGNS's second six month FLEX status report (Reference 5 of section 8)</p> |
| 3.1.3.1.A  | <p>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.</p>  | <p>This Confirmatory Item was addressed in Section 4 of GGNS's second six month FLEX status report (Reference 5 of section 8)</p> |
| 3.1.3.2.A  | <p>Confirm that procedures address UHS usability when wind generated debris is present in the UHS.</p>   | <p>This item is addressed by the update to the AQ GGN-052 response</p>  |
| 3.2.1.1.A  | <p>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</p> | <p>This item is addressed by the update to the AQ GGN-019 response</p>  |



| <b>Interim Staff Evaluation Confirmatory Items</b> |  | <b>Status</b>   |
|--|--|---|
|  | (ADAMS Accession No. ML13275A318).   |   |
| 3.2.1.2.A  | Confirm that the MAAP4 analysis includes appropriate recirculation pump seal leakage.  | This item is addressed by the update to the AQ GGN-025 response |
| 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. | This item is addressed by the update to the AQ GGN-026 response |
| 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.  | This item is addressed by the update to the AQ GGN-024 response |
| 3.2.1.8.A  | Confirm that the hydraulic calculations for the FLEX pumps demonstrate that the required flow rates can be achieved.   | This item is addressed by the update to the AQ GGN-034 response |
| 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.  | This item is addressed by the update to the AQ GGN-039 response |
| 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.  | This item is addressed by the update to the AQ GGN-026 response |
| 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.  | This item is addressed by the update to the AQ GGN-045 response |
| 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.   | This item is addressed by the update to the AQ GGN-034 response |

| <b>Interim Staff Evaluation Confirmatory Items</b> |   | <b>Status</b>   |
|--|---|---|
| 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.                                  | This item is addressed by the update to the AQ GGN-053 response |
| 3.2.4.9.A  | Confirm that the licensee has plans to refuel FLEX equipment based on the fuel oil consumption rates.   | This item is addressed by the update to the AQ GGN-055 response |
| 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 power).   | This item is addressed by the update to the AQ GGN-072 response |
| 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. | This item is addressed by the update to the AQ GGN-031 response |

| <b>Audit Questions</b> | <b>Status</b>  | <b>Completion or Target Date</b> |
|------------------------|--|----------------------------------|
| GGN-001                | Closed* - Response available on the ePortal.   |                                  |
| GGN-002                | Closed* - Response available on the ePortal. (associated with ISE Confirmatory Item 3.1.1.1.A)         |                                  |
| GGN-003                | Closed* - Updated response available on the ePortal. (associated with ISE Confirmatory Item 3.1.3.1.A) |                                  |
| GGN-005                | Closed* - Response available on the ePortal.   |                                  |
| GGN-007                | Closed* - Response available on the ePortal.   |                                  |
| GGN-008                | Closed* - Response available on the ePortal.   |                                  |
| GGN-010                | Closed* - Updated response available on the ePortal.   |                                  |
| GGN-011                | Closed* - Response available on the ePortal.   |                                  |
| GGN-012                | Closed* - Response available on the ePortal.   |                                  |
| GGN-013                | Closed* - Response available on the ePortal.   |                                  |
| GGN-014                | Closed* - Updated response available on the ePortal.   |                                  |
| GGN-015                | Closed* - Response available on the ePortal.   |                                  |

| Audit Questions | Status   | Completion or Target Date |
|-----------------|--|---------------------------|
| GGN-016         | Closed* - Response available on the ePortal.   |                           |
| GGN-017         | Closed* - Updated response available on the ePortal.   |                           |
| GGN-019         | Closed* - Updated response available on the ePortal. (associated with ISE Confirmatory Item 3.2.1.1.A).                    |                           |
| GGN-021         | Closed* - Updated response available on the ePortal.   |                           |
| GGN-022         | Closed* - Response available on the ePortal.   |                           |
| GGN-023         | Closed* - Updated response available on the ePortal.   |                           |
| GGN-024         | Closed* - Updated response available on the ePortal. (associated with ISE Confirmatory Item 3.2.1.4.A).                    |                           |
| GGN-025         | Closed* - Updated response available on the ePortal. (associated with ISE Confirmatory Item 3.2.1.2.A).                    |                           |
| GGN-026         | Closed* - Updated response available on the ePortal. (associated with ISE Confirmatory Items 3.2.1.3.A and 3.2.3.A).       |                           |
| GGN-028         | Closed* - Updated response available on the ePortal.   |                           |
| GGN-029         | Closed* - Updated response available on the ePortal.   |                           |
| GGN-030         | In Progress - This AQ response will be updated when information is available.  | Sept 2015                 |
| GGN-031         | In Progress - Updated response available on the ePortal. (associated with ISE Confirmatory Item 3.2.4.10.B).               | Sept 2015                 |
| GGN-034         | In Progress - Updated response available on the ePortal. (associated with ISE Confirmatory Items 3.2.1.8.A and 3.2.4.8.A). | Sept 2015                 |
| GGN-036         | Closed* - Updated response available on the ePortal.   |                           |
| GGN-038         | Closed* - Updated response available on the ePortal.   |                           |
| GGN-039         | Closed* - Updated response available on the ePortal. (associated with ISE Confirmatory Item                                |                           |

| Audit Questions | Status  | Completion or Target Date |
|-----------------|---|---------------------------|
|                 | 3.2.2.A).   |                           |
| GGN-040         | Closed* - Response available on the ePortal.  |                           |
| GGN-041         | Closed* - Response available on the ePortal.  |                           |
| GGN-042         | Closed* - Response available on the ePortal.  |                           |
| GGN-043         | Closed* - Updated response available on the ePortal.  |                           |
| GGN-044         | Closed* - Updated response available on the ePortal.  |                           |
| GGN-045         | Closed* - Updated response available on the ePortal. (associated with ISE Confirmatory Item 3.2.4.2.A).     |                           |
| GGN-046         | Closed* - Response available on the ePortal.  |                           |
| GGN-047         | Closed* - Updated response available on the ePortal.  |                           |
| GGN-048         | Closed* - Response available on the ePortal.  |                           |
| GGN-050         | Closed* - Response available on the ePortal.  |                           |
| GGN-052         | Closed* - Updated response available on the ePortal. (associated with ISE Confirmatory Item 3.1.3.2.A).     |                           |
| GGN-053         | Closed* - Updated response available on the ePortal. (associated with ISE Confirmatory Item 3.2.4.8.B).     |                           |
| GGN-055         | In Progress - Updated response available on the ePortal. (associated with ISE Confirmatory Item 3.2.4.9.A). | Sept 2015                 |
| GGN-057         | In Progress - Updated response available on the ePortal.  | Sept 2015                 |
| GGN-058         | Closed* - Response available on the ePortal.  |                           |
| GGN-061         | Closed* - Response available on the ePortal.  |                           |
| GGN-062         | Closed* - Updated response available on the ePortal.  |                           |
| GGN-063         | In Progress - Updated response available on the ePortal.  | Sept 2015                 |
| GGN-064         | Closed* - Updated response available on the ePortal.  |                           |
| GGN-065         | Closed* - Response available on the ePortal.  |                           |

| Audit Questions | Status   | Completion or Target Date |
|-----------------|--|---------------------------|
| GGN-066         | Closed* - Response available on the ePortal.   |                           |
| GGN-067         | Closed* - Response available on the ePortal.   |                           |
| GGN-071         | In Progress - Updated response available on the ePortal.   | Sept 2015                 |
| GGN-072         | Closed* - Updated response available on the ePortal. (associated with ISE Confirmatory Item 3.2.4.10.A). |                           |

\*Closed indicates that Entergy's response is complete.

\*\* This item is addressed by NRC confirmation of implementation of the issued modifications for the site's communications systems.

## 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-2013/0060, 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).

6. Entergy Letter to NRC, *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), dated August 26, 2014 (GNRO-2014/00060, ML14239A316).
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