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Eric W. Olson  
Site Vice President

RBG-47502

August 28, 2014

U.S. Nuclear Regulatory Commission  
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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)  
River Bend Station – Unit 1  
Docket No. 50-458  
License No. NPF-47

- 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 (ADAMS Accession No. ML12054A736) (RBC-51013)
  2. NRC Interim Staff Guidance JLD-ISG-2012-01, Compliance with Order EA-12-049, Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events, Revision 0, dated August 29, 2012 (ML12229A174)
  3. Nuclear Energy Institute (NEI) 12-06, Diverse and Flexible Coping Strategies (FLEX) Implementation Guide, Revision 0, August 2012
  4. Initial 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), RBG-47302, dated October 24, 2012
  5. Overall Integrated Plan in Response to March 12, 2012 Commission Order to Modify Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events (Order Number EA-12-049), RBG-47329, dated February 28, 2013
  6. Entergy's 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), RBG-47389, dated August 28, 2013.
  7. 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), RBG-47445, dated February 26, 2014.

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Dear Sir or Madam:

On March 12, 2012, the NRC issued an order (Reference 1) to Entergy Operations, Inc. (Entergy). Reference 1 was immediately effective and directs River Bend Station (RBS) 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. Specific requirements are outlined in Attachment 2 of Reference 1.

Reference 1 required submission of an initial status report 60 days following issuance of the final interim staff guidance (Reference 2) and an overall integrated plan pursuant to Section IV, Condition C. Reference 2 endorses industry guidance document NEI 12-06, Revision 0 (Reference 3) with clarifications and exceptions identified in Reference 2. Reference 4 provided the RBS initial status report regarding mitigation strategies. Reference 5 provided the RBS overall integrated plan.

Reference 1 requires submission of a status report at six-month intervals following submittal of the overall integrated plan. Reference 3 provides direction regarding the content of the status reports. References 6 and 7 provided the first and second six-month status report, respectively. 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 enclosed 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. Joseph Clark, Manager – Regulatory Assurance, at 225-381-4177.

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

Sincerely,



EWO/JAC/dhw

Attachment: River Bend Station's Second 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

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Attachment to

RBG-47502

(9 pages)

River Bend 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

River Bend 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

Entergy Nuclear Operations, Inc. (Entergy) developed an Overall Integrated Plan for River Bend Station (RBS) in Reference 1, which documented 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 January 31, 2014, and are current as of July 31, 2014:

- Second Six-Month Status Report — February 2014.
- Third Six-Month Status Report — 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.

Milestone	Target Completion Date	Activity Status	Revised Target Completion Date
Submit 60 Day Status Report	Oct 2012	Complete	
Submit Overall Integrated Implementation Plan	Feb 2013	Complete	
Submit Six-Month Status Report	Aug 2013	Complete	
Develop Mods	Dec 2013	Complete	
Develop Strategies (Playbook) with National SAFER Response Center	Oct 2014	Started	
Purchase/Procure Equipment	Apr 2014	Started	October 2014
Submit Six-Month Status Report	Feb 2014	Complete	
Develop FLEX Procedures	May 2014	Complete	
Create Maintenance Procedures	May 2014	Not Started	December 2014
Submit Six-Month Status Report	Aug 2014	Complete	

Milestone	Target Completion Date*	Activity Status	Revised Target Completion Date
Procedure Changes Training Material Complete	Jun 2014	Complete	
Develop Training Plan	Jun 2014	Complete	
Submit Six-Month Status Report	Feb 2015	Not Started	
Implement Training	Dec 2014	Started	
Submit Six-Month Status Report	Aug 2015	Not Started	
Submit Six-Month Status Report	Feb 2016	Not Started	
Submit Six-Month Status Report	Aug 2016	Not Started	
Implement Non-Outage Mods	Mar 2015	Started	
Validation / Demonstration	Dec 2016	Not Started	
Submit Completion Report	Dec 2016	Not Started	

\*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

During the design phase of the RBS FLEX project, changes were identified to the compliance strategies as described in the Overall Integrated Plan (Reference 1). The changes are summarized below. The changes will be incorporated into a future update.

- The descriptions of storage and protection of equipment in the OIP erroneously referenced NEI 12-06 Section 11. Section 11 is related to programmatic controls. Therefore, the descriptions are revised to reflect the following.

##### Seismic

RBS will have two pre-engineered metal buildings which will be designed for seismic per NEI 12-06, Section 5.3.1.1.b (ASCE 7-10 and local building codes). Soil borings were taken and a geotechnical report generated to determine the appropriate foundation system and to ensure that soil liquefaction will not be an issue under either building. Soil borings were also taken along the primary travel path from each building to the deployment locations to ensure that at least one pathway will not be susceptible to soil liquefaction, which satisfies NEI 12-06, Section 5.3.2.1 for soil liquefaction.

##### Flooding

Both storage buildings will be located above the flood elevation to satisfy NEI 12-06, Section 6.2.3 Consideration 1.a.

### Severe Storms with High Winds

Both storage buildings are designed in accordance with NEI 12-06, Section 7.3.1.1.c (ASCE 7-10 and local building codes) to address high winds. Additionally, to provide reasonable assurance that at least one of the storage buildings would not be damaged by tornado missiles, the two buildings are separated by 2,700 feet on a North-South axis that is approximately perpendicular to the axis of the predominant path for tornadoes in the area of the site. The separation distance is based on an evaluation of historical tornado data for the region immediately surrounding the RBS site.

### Snow, Ice, and Extreme Cold

The storage buildings will be designed to meet NEI 12-06, Section 8.3.1.1.b (ASCE 7-10 and local building codes) for ice. The site's design basis temperature will be used for the extreme cold considerations. Local block heaters, water jackets, etc. may be provided for equipment such that the entire storage building will not have to be heated.

### High Temperatures

The storage buildings will be designed to maintain the inside temperature within the FLEX equipment manufacturers' recommended storage temperatures to satisfy NEI 12-06, Section 9.3.1.

- The method for providing makeup to the RBS ultimate heat sink (UHS) is described on page 25 of 60 of the Overall Integrated Plan (Reference 1). The original method was to haul water from the Mississippi River using trucks provided by the NSRC (formerly RRC). Entergy has now determined that the NSRC will not supply the means for providing makeup to the UHS. Therefore, RBS plans to amend an existing supplier contract to include FLEX support. For FLEX events, the contractor will provide 20,000 gallons of makeup water per hour by truck beginning at 72 hours following the initiating event. The contractor will also install a pump and hard 12-inch pipeline from the Mississippi River to the UHS. The makeup by truck will continue until the pump and pipeline are functioning.

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

RBS 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. Beyond-design-basis external event impact on requirements in existing licensing documents will be determined based on input from the industry groups and direction from the NRC.	Entergy has determined that no FSAR changes are required to reflect FLEX.



Overall Integrated Plan Open Items	Status
2. Structure, content and details of the Regional Response Center playbook will be determined.	In progress

Interim Staff Evaluation Open Items	Status
None	

Interim Staff Evaluation Confirmatory Items	Status
3.1.3.1.A Confirm that the 2,700 foot separation distance between FLEX storage facilities will be sufficient to ensure that that a single tornado would not impact both locations when considering the local tornado data, the actual separation distance and axis.	Addressed by updated AQ RBS-001 response
3.2.1.1.A Confirm that benchmarks are identified and discussed which demonstrate that Modular Accident Analysis Program (MAAP) is an appropriate code for the simulation of an ELAP event at RBS, consistent with the NRC endorsement (ADAMS Accession No. ML13275A318) of the industry position paper on MAAP.	Addressed by updated AQ RBS-009 response
3.2.1.1.B Confirm that the collapsed RPV level remains above Top of Active Fuel and the reactor coolant system cool down rate is within technical specifications limits.	Addressed by updated AQ RBS-012 response
3.2.1.1.C Confirm that MAAP is used in accordance with Sections 4.1, 4.2, 4.3, 4.4, and 4.5 of the June 2013 position paper (ADAMS Accession No. ML13190A201).	Addressed by updated AQ RBS-010 response
3.2.1.1.D Confirm that, in using MAAP, the subset of key modeling parameters cited from Tables 4-1 through 4-6 of the "MAAP Application Guidance, Desktop Reference for Using MAAP Software, Revision 2" (Electric Power Research Institute Report 1020236, available at www.epri.com). This should include response at a plant-specific level regarding specific modeling options and parameter choices for key models that would be expected to substantially affect the ELAP analysis performed for RBS.	Addressed by updated AQ RBS-011 response
3.2.1.2.A Confirm that the details of the seal qualification tests, the seal leakage rate models, and supporting test data and any conservative margin support the 66 gallons per minute recirculation pump seal leakage assumed in the ELAP analysis.	Addressed by updated AQ RBS-013 response

Interim Staff Evaluation Confirmatory Items		Status
3.2.1.4.A	Confirm that the seismic evaluation of SPC system components, the spent fuel pool cooling piping, and the battery bus crosstie electrical cabinet used to support FLEX coping strategies, are completed with acceptable results.	Addressed by updated AQ RBS-003 and RBS-056 responses
3.2.1.4.B	Confirm that the allowable minimum system pressure required to open the SRVs in relation to the RPV pressure, during the depressurization and the RPV fill evolution, is adequately determined.	Addressed by updated AQ RBS-061 response
3.2.1.4.C	Confirm that the stresses associated with passing liquid phase water through the SRV tail pipe, including those on the tail pipe, the tail pipe supports, the quencher and the quencher supports are evaluated with acceptable results.	Addressed in updated AQ response spreadsheet on ePortal
3.2.1.7.A	Confirm the ability to supply cooling water to the upper containment pool when it is being used for fuel storage during refueling. This capability should be consistent with the NEI paper entitled "Shutdown/Refueling Modes" (ADAMS Accession No. ML13273A514), which has been endorsed by the NRC in a letter dated September 30, 2013 (ADAMS Accession No. ML13267A382), and which the licensee has indicated will be followed.	Addressed by updated AQ RBS-64 response
3.2.1.8.A	Confirm the acceptability of the alternate approach for use of the installed SPC pumps for RPV makeup. Specifically, confirm the ability of the backup portable pump's capacity to provide both RPV injection and makeup water to the SFP concurrently.	Addressed by updated AQ RBS-061 response and white paper uploaded to ePortal on 6/4/2014.
3.2.3.A	Confirm that the licensee completes an acceptable MAAP analysis to demonstrate that containment functions are maintained in all phases of an ELAP, with particular regard to the qualification of drywell penetrations and seals at elevated temperatures.	Addressed by updated AQ RBS-013 response
3.2.3.B	Confirm that the 209 degrees Fahrenheit suppression pool temperature reached in the ELAP event (which is over the 185 degrees Fahrenheit design limit) does not adversely impact the structural integrity of the containment.	Addressed by updated AQ RBS-054 response
3.2.4.4.A	Confirm that any planned changes described in the NRC's communications assessment (ADAMS Accession No. ML13130A068) are completed.	In progress.
3.2.4.8.A	Confirm that supporting analyses related to the final size/loading of FLEX generators is completed with acceptable results.	Addressed by updated AQ RBS-049 response

Interim Staff Evaluation Confirmatory Items		Status
3.2.4.10.A	Confirm that the final minimum dc bus voltage is determined as part of the evaluation of an acceptable battery and de loading profile for the ELAP event.	Addressed by updated AQ RBS-047 response
3.4.A	Confirm that the licensee has fully addressed the provisions of NEI 12-06, Sections 5.3.4, 6.2.3.4, 7.3.4, 8.3.4, and 12.2, regarding considerations in using offsite resources.	Addressed in updated AQ response spreadsheet on ePortal

Audit Questions	Status	Completion or Target Date
RBS-001	Updated response available on ePortal (ISE Confirmatory Item 3.1.3.1.A)	
RBS-002	Closed*	
RBS-003	Updated response available on ePortal (ISE Confirmatory Item 3.2.1.4.A)	
RBS-004	Updated response available on ePortal	
RBS-005	Updated response available on ePortal	
RBS-006	Closed*	
RBS-008	Updated response available on ePortal	
RBS-009	Updated response available on ePortal (ISE Confirmatory Item 3.2.1.1.A)	
RBS-010	Updated response available on ePortal (ISE Confirmatory Item 3.2.1.1.C)	
RBS-011	Updated response available on ePortal (ISE Confirmatory Item 3.2.1.1.D)	
RBS-012	Updated response available on ePortal (ISE Confirmatory Item 3.2.1.1.B)	
RBS-013	Updated response available on ePortal (ISE Confirmatory Item 3.2.1.2.A and ISE Confirmatory Item 3.2.3.A)	
RBS-015	Updated response available on ePortal	
RBS-016	Updated response available on ePortal	
RBS-018	Updated response available on ePortal	
RBS-019	Closed*	
RBS-020	Closed*	
RBS-021	Updated response available on ePortal	
RBS-022	Updated response available on ePortal	

Audit Questions	Status	Completion or Target Date
RBS-024	Updated response available on ePortal	
RBS-027	Closed*	
RBS-028	Closed*	
RBS-030	Updated response available on ePortal	
RBS-031	Updated response available on ePortal	
RBS-032	Updated response available on ePortal	
RBS-033	Updated response available on ePortal	
RBS-034	Closed*	
RBS-035	Closed*	
RBS-037	Closed*	
RBS-038	Closed*	
RBS-045	Closed*	
RBS-046	Updated response available on ePortal	
RBS-047	Updated response available on ePortal (ISE Confirmatory Item 3.2.4.10.A)	
RBS-049	Updated response available on ePortal (ISE Confirmatory Item 3.2.4.8.A)	
RBS-051	Closed*	
RBS-052	Closed*	
RBS-053	Closed*	
RBS-054	Updated response available on ePortal (ISE Confirmatory Item 3.2.3.B)	
RBS-055	Updated response available on ePortal	
RBS-056	Updated response available on ePortal (ISE Confirmatory Item 3.2.1.4.A)	
RBS-057	Updated response available on ePortal	
RBS-058	Closed*	
RBS-059	Closed*	
RBS-060	Updated response available on ePortal	
RBS-061	Updated response available on ePortal (ISE Confirmatory Items 3.2.1.4.B and 3.2.1.8.A)	
RBS-062	Updated response available on ePortal	
RBS-063	Closed*	

Audit Questions	Status	Completion or Target Date
RBS-064	Updated response available on ePortal (ISE Confirmatory Item 3.2.1.7.A)	

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

## 7. Potential Interim Staff Evaluation Impacts

The following item has been identified which has potential impact to the Interim Staff Evaluation (ISE). Items identified in Section 4 of this report and the previous six month status report (Reference 5) also have potential to impact the ISE.

1. Technical Evaluation Report Section 3.2.1.8, Page 43 states "To evaluate the alternate approach, the reviewer notes that RBS included a strategy to use a portable pump for RPV makeup in the strategies developed pursuant to Order EA-02-026, the subsequently imposed license conditions, and 10 CFR 50.54(hh)(2). The extensive damage mitigation procedure, OSP-0066 provides several methods of injecting water into the RPV using a portable pump, FPW-P4, which can also be used for SFP makeup" and "However, the licensee has not provided a discussion of the pump's capacity to provide both RPV injection and makeup water to the SFP concurrently." Confirmatory Item 3.2.1.8.A in Section 4.2, below." These statements imply that RBS is using the 10 CFR 50.54(hh)(2) pump for core cooling in the FLEX strategy. This is not the case. RBS intends to use SPC pumps as described in the OIP for core cooling. See the status of Confirmatory Item 3.2.1.8.A in above table.

## 8. References

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

1. River Bend Station Overall Integrated Plan In Response To March 12, 2012 Commission Order To Modify Licenses With Regard To Requirements For Mitigation Strategies For Beyond-Design-Basis External Events (Order Number EA-12-049), dated February 28, 2013.
2. NRC Order Number EA-12-049, "Issuance of Order to Modify Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events," dated March 12, 2012.
3. Entergy's 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), RBG-47389, dated August 28, 2013.
4. NRC Letter, "River Bend Station - Interim Staff Evaluation Relating to Overall Integrated Plan in Response to Order EA-12-049 (Mitigation Strategies) (TAC No. MF0952)," dated February 25, 2014 (ML13365A281).

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5. 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), RBG-47445, dated February 26, 2014.