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

October 1, 2014

Vice President, Operations
Entergy Operations, Inc.
River Bend Station
5485 U.S. Highway 61N
St. Francisville, LA 70775

SUBJECT: RIVER BEND STATION, UNIT 1- PLAN FOR THE ONSITE AUDIT REGARDING IMPLEMENTATION OF MITIGATING STRATEGIES AND RELIABLE SPENT FUEL INSTRUMENTATION RELATED TO ORDERS EA-12-049 AND EA-12-051 (TAC NOS. MF0952 AND MF0953)

Dear Sir or Madam:

On March 12, 2012, the U.S. Nuclear Regulatory Commission (NRC) issued Order EA-12-049, "Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond Design-Basis External Events" and Order EA-12-051, "Order to Modify Licenses With Regard To Reliable Spent Fuel Pool Instrumentation," (Agencywide Documents Access and Management System (ADAMS) Accession Nos. ML12054A736 and ML12054A679, respectively). The orders require holders of operating reactor licenses and construction permits issued under Title 10 of the *Code of Federal Regulations* Part 50 to submit for review, Overall Integrated Plans (OIPs) including descriptions of how compliance with the requirements of Attachment 2 of each order will be achieved.

By letter dated February 28, 2013 (ADAMS Accession No. ML13066A738), Entergy Operations, Inc. (Entergy, the licensee) submitted its OIP for River Bend Station, Unit 1 (RBS) in response to Order EA-12-049. By letters dated August 28, 2013, February 26, 2014 and August 28, 2014 (ADAMS Accession Nos. ML13247A414, ML14064A202 and ML14253A210, respectively), the licensee submitted its first three six-month updates to the OIP. By letter dated August 28, 2013 (ADAMS Accession No. ML13234A503), the NRC notified all licensees and construction permit holders that the staff is conducting audits of their responses to Order EA-12-049 in accordance with NRC Office of Nuclear Reactor Regulation (NRR) Office Instruction LIC-111, "Regulatory Audits" (ADAMS Accession No. ML082900195). This audit process led to the issuance of the RBS interim staff evaluation (ISE) and audit report (ADAMS Accession No. ML13365A281) on February 25, 2014, and continues with in-office and onsite portions of this audit.

By letter dated February 28, 2013 (ADAMS Accession No. ML130660550), the licensee submitted its OIP for RBS in response to Order EA-12-051. By letter dated July 3, 2013 (ADAMS Accession No. ML13179A193), the NRC staff sent a request for additional information (RAI) to the licensee. By letters dated July 25, 2013, August 28, 2013, February 26, 2014 and August 28, 2014 (ADAMS Accession Nos. ML13217A092, ML13247A416, ML14064A263, and ML14253A209, respectively), the licensee submitted its RAI responses and first three six-month updates to the OIP. The NRC staff's review of these submittals led to the issuance of the RBS ISE and RAI dated November 25, 2013 (ADAMS Accession No. ML13316C065). By letter dated March 26, 2014 (ADAMS Accession No. ML14083A620), the NRC notified all licensees and construction permit holders that the staff is conducting in-office and onsite audits of their

responses to Order EA-12-051 in accordance with NRC NRR Office Instruction LIC-111, as discussed above.

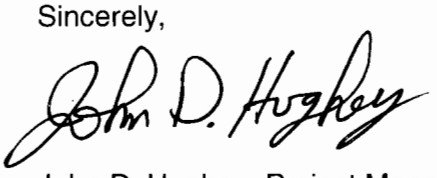
The ongoing audit process, to include the in-office and onsite portions, allows the staff to assess whether it has enough information to make a safety evaluation of the Integrated Plans. The audit allows the staff to review open and confirmatory items from the mitigation strategies ISE, RAI responses from the spent fuel pool instrumentation ISE, the licensee's integrated plans, and other audit questions. Additionally, the staff gains a better understanding of submitted information, identifies additional information necessary for the licensee to supplement its plan, and identifies any staff potential concerns. The audit's onsite portion will occur prior to declarations of compliance for the first unit at each site.

This document outlines the on-site audit process that occurs after ISE issuance as licensees provide new or updated information via periodic updates, update audit information on e-portals, provide preliminary Overall Program Documents/Final Integrated Plans, and continue in-office audit communications with staff while proceeding towards compliance with the orders.

The staff plans to conduct an onsite audit at RBS in accordance with the enclosed audit plan from October 20 - 23, 2014.

If you have any questions, please contact me at 301-415-3204 or by e-mail at john.hughey@nrc.gov.

Sincerely,



John D. Hughey, Project Manager
Orders Management Branch
Japan Lessons-Learned Division
Office of Nuclear Reactor Regulation

Docket No.: 50-458

Enclosure:
Audit plan

cc w/encl: Distribution via Listserv

Audit Plan
River Bend Station, Unit 1

BACKGROUND AND AUDIT BASIS

On March 12, 2012, the U.S. Nuclear Regulatory Commission (NRC) issued Order EA-12-049, "Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond Design-Basis External Events" and Order EA-12-051, "Order to Modify Licenses With Regard To Reliable Spent Fuel Pool Instrumentation," (Agencywide Documents Access and Management System (ADAMS) Accession Nos. ML12054A736 and ML12054A679, respectively). Order EA-12-049 directs licensees to develop, implement, and maintain guidance and strategies to maintain or restore core cooling, containment, and spent fuel pool (SFP) cooling capabilities in the event of a beyond-design-basis external event (BDBEE). Order EA-12-051 requires, in part, that all operating reactor sites have a reliable means of remotely monitoring wide-range SFP levels to support effective prioritization of event mitigation and recovery actions in the event of a BDBEE. The orders require holders of operating reactor licenses and construction permits issued under Title 10 of the *Code of Federal Regulations* Part 50 to submit for review, Overall Integrated Plans (OIPs) including descriptions of how compliance with the requirements of Attachment 2 of each order will be achieved.

By letter dated February 28, 2013 (ADAMS Accession No. ML13066A738), Entergy Operations, Inc. (Entergy, the licensee) submitted its OIP for River Bend Station, Unit 1 (RBS) in response to Order EA-12-049. By letters dated August 28, 2013, February 26, 2014 and August 28, 2014 (ADAMS Accession Nos. ML13247A414, ML14064A202 and ML14253A210, respectively), the licensee submitted its first three six-month updates to the OIP. By letter dated August 28, 2013 (ADAMS Accession No. ML13234A503), the NRC notified all licensees and construction permit holders that the staff is conducting audits of their responses to Order EA-12-049 in accordance with NRC Office of Nuclear Reactor Regulation (NRR) Office Instruction LIC-111, "Regulatory Audits" (ADAMS Accession No. ML082900195). This audit process led to the issuance of the RBS interim staff evaluation (ISE) and audit report (ADAMS Accession No. ML13365A281) on February 25, 2014, and continues with in-office and onsite portions of this audit.

By letter dated February 28, 2013 (ADAMS Accession No. ML130660550), the licensee submitted its OIP for RBS in response to Order EA-12-051. By letter dated July 3, 2013 (ADAMS Accession No. ML13179A193), the NRC staff sent a request for additional information (RAI) to the licensee. By letters dated July 25, 2013, August 28, 2013, February 26, 2014 and August 28, 2014 (ADAMS Accession Nos. ML13217A092, ML13247A416, ML14064A263, and ML14253A209, respectively), the licensee submitted its RAI responses and first three six-month updates to the OIP. The NRC staff's review of these submittals led to the issuance of the RBS ISE and RAI dated November 25, 2013 (ADAMS Accession No. ML13316C065). By letter dated March 26, 2014 (ADAMS Accession No. ML14083A620), the NRC notified all licensees and construction permit holders that the staff is conducting in-office and onsite audits of their responses to Order EA-12-051 in accordance with NRC NRR Office Instruction LIC-111, as discussed above.

The ongoing audit process, to include the in-office and onsite portions, allows the staff to assess whether it has enough information to make a safety evaluation of the Integrated Plans. The audit allows the staff to review open and confirmatory items from the mitigation strategies ISE,

RAI responses from the spent fuel pool instrumentation (SFPI) ISE, the licensee's integrated plans, and other audit questions. Additionally, the staff gains a better understanding of submitted information, identifies additional information necessary for the licensee to supplement its plan, and identifies any staff potential concerns. The audit's onsite portion will occur prior to declarations of compliance for the first unit at each site.

This document outlines the onsite audit process that occurs after ISE issuance as licensees provide new or updated information via periodic updates, update audit information on e-portals, provide preliminary Overall Program Documents (OPDs)/Final Integrated Plans (FIPs), and continue in-office audit communications with staff while proceeding towards compliance with the orders.

Following the licensee's declarations of order compliance, the NRC staff will evaluate the OIPs as supplemented, the resulting site-specific OPDs/FIPs, and, as appropriate, other licensee submittals based on the requirements in the orders. For Order EA-12-049, the staff will make a safety determination regarding order compliance using the Nuclear Energy Institute (NEI) guidance document NEI 12-06, "Diverse and Flexible Coping Strategies (FLEX) Implementation Guide" issued in August, 2012 (ADAMS Accession No. ML12242A378), as endorsed by NRC Japan Lessons-Learned Project Directorate (JLD) interim staff guidance (ISG) 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'" (ADAMS Accession No. ML12229A174) as providing one acceptable means of meeting the order requirements. For Order EA-12-051, the staff will make a safety determination regarding order compliance using the NEI guidance document NEI 12-02, "Industry Guidance for Compliance with NRC Order EA-12-051, 'To Modify Licenses with Regard to Reliable Spent Fuel Pool Instrumentation'" (ADAMS Accession No. ML12240A307), as endorsed, with exceptions and clarifications, by NRC ISG JLD-ISG-2012-03 "Compliance with Order EA-12-051, 'Reliable Spent Fuel Pool Instrumentation'" (ADAMS Accession No. ML12221A339) as providing one acceptable means of meeting the order requirements. Should the licensee propose an alternative strategy or other method deviating from the guidance, additional staff review will be required to evaluate if the alternative strategy complies with the applicable order.

AUDIT SCOPE

As discussed, onsite audits will be performed per NRR Office Instruction LIC-111, "Regulatory Audits," to support the development of safety evaluations. The purpose of the audits is to obtain and review information responsive to the RBS OIPs, as supplemented, open and confirmatory items from the mitigation strategies ISE, RAI responses from the SFPI ISE, and to observe and gain a better understanding of the basis for the site's overall programs to ensure the licensee is on the correct path for compliance with the Mitigation Strategies and SFPIorders. These may include, but are not limited to:

- Onsite review and discussion for the basis and approach for detailed analysis and calculations (Orders EA-12-049, EA-12-051);

- Walk-throughs of strategies and laydown of equipment to assess feasibility, timing, and effectiveness of a given mitigating strategy or integration of several strategies (Order EA-12-049);

- Storage, protection, access, and deployment feasibility and practicality for onsite portable equipment (Order EA-12-049);

- Evaluation of staging, access, and deployment of offsite resources to include Regional Response Center (RRC) provided equipment (Order EA-12-049); and

- Review dimensions and sizing of the SFP area, placement of the SFP level instrumentation, and applicable mounting methods and design criteria (Order EA-12-051).

NRC AUDIT TEAM

Title	Team Member
Team Lead / Project Manager	John Hughey
Technical Support	Brian Lee
Technical Support	Mike Levine
Technical Support	Prem Sahay
Technical Support	Stephen Wyman
Technical Support	Joshua Miller

LOGISTICS

The audit will be conducted onsite at RBS on October 20 - 23, 2014. Entrance and exit briefings will be held with the licensee at the beginning and end of the audit, respectively, as well as daily briefings of team activities. Additional details will be addressed over the phone. A more detailed schedule is provided below.

A private conference room is requested for NRC audit team use with access to audit documentation upon arrival and as needed.

DELIVERABLES

An audit report/summary will be issued to the licensee within 60 days from the end of the audit.

INFORMATION NEEDS

- Materials/documentation provided in responses to open or confirmatory items and RAIs in the ISEs;
- OPD/FIP (current version), operator procedures, FLEX Support Guidelines (FSGs), operator training plans, RRC (SAFER) RBS Response Plan; and
- Materials/documentation for staff audit questions and/or licensee OIP identified open items as listed in the Part 2 table below

To provide supplemental input to the ongoing audit of documents submitted to the NRC and made available via e-portal, the onsite audit will have three components: 1) a review of the overall mitigating strategies for the site, including, if needed, walk-throughs of strategies and equipment laydown of select portions; 2) a review of material relating to open or confirmatory items and RAIs from the ISEs, staff audit questions, and licensee open items; and 3) additional specific issues requested by NRC technical reviewers related to preparation of a safety evaluation. Each part is described in more detail below:

Part 1 - Overall Mitigating Strategies and Program Review:

During the onsite audit, please be prepared to conduct a tabletop discussion of the site's integrated mitigating strategies and SFP instrumentation compliance program. This discussion should address the individual components of the plans, as well as the integrated implementation of the strategies including a timeline. The licensee team presenting this should include necessary representatives from site management, engineering, training, and operations that were responsible for program development, and will be responsible for training and execution.

Following the tabletop discussion, please be prepared to conduct walk-throughs of procedures and demonstrations of equipment as deemed necessary by NRC audit team members. Include representatives from engineering and operations that will be responsible for training and execution. At this time we expect, at a minimum, to walk-through the items below. Based on the tabletop presentations and audit activities, this list may change.

WALK-THROUGH LIST:

1. Walk-through a sample of strategies that will be delineated by specific NRC technical staff audit team members

2. Walk-through of portable (FLEX) diesel generator (DG) procedures, to include power supply pathways, areas where manual actions are required, and electrical isolation

3. Walk-through of building access procedures, to include any unique access control devices

4. Strategy walk-through of transfer routes from staging and storage areas to deployment locations for both onsite and offsite equipment

5. Strategy walk-through for core cooling and reactor coolant system (RCS) inventory, to include portable pumping equipment, flow paths, and water storage locations and the related reactor systems analysis and calculations

6. Walk-through of communications enhancements

7. Walk-through of SFP area, SFP instrumentation locations, and related equipment mounting areas

Part 2 – Specific Technical Review Items:

During the visit, the following audit items will be addressed from the licensee's ISEs (open items (OI), confirmatory items (CI), and SFPI RAIs; audit question list (AQ); licensee OIP, as supplemented, open items; and draft safety evaluation (SE) additional questions. Please provide documents or demonstrations as needed to respond to each item.

Audit Item Reference	Item Description
ISE CI 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 [extended loss of alternating current (ac) power] ELAP event at RBS, consistent with the NRC endorsement (ADAMS Accession No. ML13275A318) of the industry position paper on MAAP.
ISE CI 3.2.1.1.B	Confirm that the collapsed [reactor pressure vessel] RPV level remains above Top of Active Fuel and the reactor coolant system cool down rate is within technical specifications limits.
ISE CI 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).

Audit Item Reference	Item Description
ISE CI 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 [EPRI] 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.
ISE CI 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.
ISE CI 3.2.1.4.A	Confirm that the seismic evaluation of [suppression pool cleanup] 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.
ISE CI 3.2.1.4.B	Confirm that the allowable minimum system pressure required to open the [safety relief valves] SRVs in relation to the RPV pressure, during the depressurization and the RPV fill evolution, is adequately determined.
ISE CI 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.
ISE CI 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.
ISE CI 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.
ISE CI 3.2.4.4.A	Confirm that any planned changes described in the NRC's communications assessment (ADAMS Accession No. ML13130A068) are completed.
ISE CI 3.2.4.8.A	Confirm that supporting analyses related to the final size/loading of FLEX generators is completed with acceptable results.
ISE CI 3.2.4.10.A	Confirm that the final minimum [direct current] dc bus voltage is determined as part of the evaluation of an acceptable battery and dc loading profile for the ELAP event.
AQ - 8	In the integrated plan, Entergy has presented information on the heat up of a variety of enclosed rooms and spaces, but has not presented any information on the potential effects of high ambient temperatures at the locations where portable equipment would operate during a high temperature hazard. Provide additional information concerning the effects of high temperatures on portable equipment as specified by NEI 12-06, Section 9.3.3.

Audit Item Reference	Item Description
AQ - 12	The Integrated Plan does not contain sufficient analytical results to support the conclusions that the predictions of the code(s) used are consistent with expected plant behavior and that core cooling would be maintained by performing the identified actions within their time constraints. Provide the relevant calculations that demonstrate adequate core cooling for NRC staff review (e.g., RPV water level, pressure and temperature, etc...).
AQ - 15	Design-basis implications of coping strategy to cross-tie Class 1E Division I/II dc buses. Entergy has addressed a coping strategy to increase station battery coping time by cross-tying Class 1E Division I and Division II dc buses. However, Entergy has not provided assurance that this action would not impair the safety functions of plant structures, systems and components that are designated for the mitigation of anticipated operational occurrences and postulated accidents that are currently in the licensed design basis. Provide additional information discussing the safety implications of cross-tied safety divisions on the design and licensing basis of the plant. Also, provide a discussion of divisional separation and of measures to prevent inadvertent closure of cross-tie circuit breakers and or switches. Finally, provide a detailed discussion of the engineering basis for the assumed increased battery coping time resulting from cross-tying two partially discharged station batteries.
AQ - 16	Station battery charger on cross-tied Class 1E Division I/II dc buses. Entergy has developed a coping strategy to cross-tie Class 1E Division I and Division II dc buses. Provide additional information to assure that the station battery charger placed on to the cross-tied electrical buses will not impair the operability of the station battery charger. Include a discussion of the battery charger capacity, the expected electrical loads and protective devices for the battery charger and any implications in the safety design-basis. Also, Entergy is requested to provide additional information concerning the capacity of portable/FLEX and RRC FLEX electrical generators and of the critical electrical loads. This should include: 1) The electrical power requirements for the final phase (Phase 3) of the mitigating strategies integrated plan; 2) The capacity of the power sources; 3) Provide Single Line Diagrams showing the proposed connections of Phase 2 and 3 electrical equipment on the e-Portal. Show protection information (breaker, relay etc.) and rating of the equipment on the Single Line Diagrams. This is necessary in order to determine whether the equipment design criteria conform to NEI 12-06, Section 11.2.
AQ - 18	Supporting details of battery load shedding effectiveness. Provide the dc load profile with the required loads for the mitigating strategies to maintain core cooling, containment, and spent fuel pool cooling.

Audit Item Reference	Item Description
AQ - 20	Generic concern on temperature of the reactor core isolation cooling (RCIC) suction. On page 13 of 60, in the section of the integrated plan discussing maintaining core cooling during the initial phase, Entergy stated: The Boiling Water Reactor Owners Group has commissioned General Electric (GE) - Hitachi Nuclear Energy to perform an evaluation of the effects of RCIC system operation at extended pumped fluid temperatures. The purpose of the study is to identify recommendations for allowing the RCIC turbine/pump to operate at extended pump fluid temperatures (as high as 300°F) for an extended period of time (up to 168 hours). The study has not been issued as final; however, the draft study has been issued for industry review and comment. The draft study provides recommendations for increasing the availability for the RCIC system for the extended fluid temperatures. Also, based on experience derived from Fukushima, the RCIC system can run at a much higher lube oil temperature and suction source temperature. Entergy relies on GE Task Report 0000-0143-0382-R0 (RCIC System Operation in Prolonged Station Blackout - Feasibility Study, January 2012) and concludes that RCIC will continue to operate with suction from the suppression pool with temperatures above 200 degrees Fahrenheit. Provide additional information to justify that RCIC will continue to operate with a suppression pool suction temperature above 200 degrees Fahrenheit.
AQ - 21	Coping strategy hydraulic calculation basis. NEI 12-06, Section 11.2 specifies the equipment design characteristics to be considered in developing coping strategies and specifying portable/FLEX equipment. The integrated plan does not contain supporting information concerning the required flow rates, the portable/FLEX pump characteristics, suction and discharge losses elevation differences and piping losses to allow verification that this will be a successful strategy. Provide additional basis or analysis that supports this strategy. The tables on pages 50 and 51 of 60, in the section of the integrated plan listing boiling water reactor (BWR) portable/FLEX equipment for the transition and final phases (Phase 2 and 3). However, those tables do not include the capacities and other characteristics of that equipment. Provide these additional details to include flow requirement to meet the three functional requirements. Since Entergy is planning on using the same strategy for providing make up water, the response should address how the flow requirements will be met for each strategy and include any additional basis or analysis that supports this strategy.

Audit Item Reference	Item Description
AQ - 24	Compressed gas systems. There is insufficient detail in the integrated plan to evaluate the coping strategies to sustain the operation of the SRVs during an ELAP by recharging the accumulators from backup air sources, the robustness of those backup sources and interconnecting piping. Provide a discussion of the rate of compressed air use by the SRV's and the suppression pool bubbler level instrument and the capacity of stored compressed air cylinders, the amount of compressed air stored on site, the storage locations and method of transportation as well as the access pathways and the seismic robustness of structures that need to be accessed and the robustness of those backup sources and interconnecting piping.
AQ - 27	Spent Fuel Pool Cooling coping strategies during the final phase. On page 40 of 60, in the section of the integrated plan discussing spent fuel pool cooling during the final phase, Entergy has stated that they intend to use transition phase coping strategies for fuel pool cooling during the final phase. The coping strategies for fuel pool cooling during the transition phase cool the spent fuel pool by adding water to the spent fuel pool by one or more flow or spray paths pumped from the Standby Service Water (SSW) cooling tower basin, the RBS Ultimate Heat Sink, using portable/FLEX pumps. Provide coping strategies for fuel pool cooling during the final phase utilizing RRC portable/FLEX equipment, or to confirm that they intend to maintain adding water to the spent fuel pool indefinitely. In that case, explain how the portable generators and their fuel supply are capable of spent fuel pool cooling indefinitely.
AQ - 30	Main Control Room Habitability. In the integrated plan, Entergy has presented insufficient information to conclude that the habitability limits of the control room will be maintained in all Phases of an ELAP. Provide a detailed discussion of the technical basis and the resulting plan to ensure that both the equipment qualification and the habitability limits of the main control room will be maintained in all Phases of an ELAP.
AQ - 33	Battery Room Ventilation. Provide information on the adequacy for the ventilation provided in the battery room to protect the batteries from the effects of extreme high and low temperatures. Provide a discussion of battery room ventilation to prevent hydrogen accumulation while recharging the batteries in phase 2 or 3. In your response, include a description of the exhaust path if it is different from the design-basis.
AQ - 34	Air quality concerning operation of diesel powered generators. Entergy has not provided details of their plans for placement of diesel powered portable/FLEX equipment and their plans to ventilate indoor locations and monitor air quality in building locations that may be affected by their exhaust. Provide additional information detailing their plans for placement of gasoline or diesel powered portable/FLEX equipment near or within plant buildings and to provide details of their plans to ventilate indoor locations and monitor air quality in locations that may be affected by the exhaust from portable/FLEX pumps and electrical generators. Include the smaller generators intended to reenergize communications, lighting and other support equipment.

Audit Item Reference	Item Description
AQ - 35	Emergency and hand held lighting. Entergy has not discussed the availability of emergency, portable and hand held lighting to plant operators for implementation of coping strategies during an ELAP specified by NEI 12-06, Section 3.2.2, consideration (8). Portable and hand held lighting is not listed in the section of the integrated plan discussing portable/FLEX equipment available on-site during the transition phase. Provide additional information on the availability of station emergency lighting in the plant areas necessary to access to complete coping strategies. Include the access pathways to those locations in your discussion. Discuss the expected battery lifetime of that lighting and further compensatory measures for lighting. Include a discussion on the availability of portable and hand held lighting designated for use during an emergency such as an ELAP.
AQ - 37	Access to the Protected Area and internal locked areas. Entergy has not discussed their coping strategies to maintain area access during an ELAP specified by NEI 12-06, Section 3.2.2, consideration (9). Provide a discussion of guidance and coping strategies with regard to the effects of ac power loss on facility area access. Include a discussion of plant interior locked areas and exterior perimeter and site access.
AQ - 38	Protection of station Emergency Diesel Generators, station electrical switchgear and electrical components from damage, NEI 12-06, Section 3.2.2, consideration (13). In the information presented, there was insufficient information available regarding electrical isolations and interactions. Entergy is requested to describe how electrical isolation will be maintained such that (a) Class 1E equipment is protected from faults in portable/FLEX equipment and (b) multiple sources do not attempt to power electrical buses.
AQ - 45	Station battery capacity. Provide a discussion on the effects of heightened/lowered temperatures (i.e., temperatures above/below those assumed in the sizing calculation for each battery) on each battery's capability to perform its function for the duration of the ELAP event.
AQ - 46	Discuss which components change state when loads are shed and actions needed to mitigate resultant hazards (for example, allowing hydrogen release from the main generator, disabling credited equipment via interlocks, etc.).
AQ - 54	Page 4 of the OIP states that analysis will be performed by GEH to conclude that (a) temporarily exceeding the suppression pool design temperature limit of 185°F during the event is acceptable and (b) Exceeding the Heat Capacity Temperature Limit (HCTL), Pressure Suppression Pressure Limit (PSPL), and Safety Relief Valve Tail Pipe Level Limit (SRVTPLL) without emergency depressurization is acceptable. Please provide these analysis results and conclusions when complete.
AQ - 55	Pages 42 and 43 of the OIP indicate that additional analysis will be performed to determine the need for and sizing of portable fans for the Standby Switchgear and DC Equipment Rooms; however, the 6 month update contains no Open Item associated with these outstanding analyses. Clarify how these analyses will be tracked to completion.

Audit Item Reference	Item Description
AQ - 57	MESB-BOP2: Provide additional information that explains how fuel oil will be provided to the site to meet the NEI 12-06 objective for "indefinite" coping capabilities, and a description of the refueling strategy for all FLEX equipment requiring diesel fuel/gasoline. Also provide a discussion of how fuel oil quality will be maintained.
AQ - 59	MESB-BOP-4: For Phase 1 core cooling the licensee is proposing a modification to be able to use the Upper containment pool (UCP) as a water source for RCIC suction. In order to use the UCP for BDBEE mitigation the licensee states that siphon breakers in the UCP must be left closed during normal operation and that defeating the siphon breakers would slightly increase the chance of inadvertently draining the UCP. The staff requests that the licensee provide addition information about any technical specification requirements applicable to the UCP during normal operation, magnitude of the increased risk of pool drainage, and the effect of pool drainage as it relates to mitigation of design-basis accidents.
AQ - 60	MESB-BOP-5: The licensee states that information obtained from Alfa Laval for the Model MX25-BFD plate heat exchanger (HX) currently installed at RBS indicates that as much as 118 MBTU/HR would be removed with a 200°F inlet temperature and 90°F outlet temperature, which would be more than adequate to remove the expected decay at 8 hours of -90 MBTU/h. Provide information indicating whether the vendor supplied information accounts for plugging, fouling, etc., whether the current state of the HX (plugging, fouling, etc.) is within the bounds of the vendor supplied information, and whether the performance requirements for this HX have been verified to support the heat transfer assumptions for the mitigating strategies.
AQ - 61	MESB-BOP-6: In the OIP, the licensee states that when the UCP is depleted, a new injection source will be required. To accomplish this, the vessel will be completely depressurized by opening five SRVs and the SPC system will be aligned to feed the vessel. NEI 12-06 Section 3.2.2, Consideration 12, states that regardless of installed coping capability, all plants will include the ability to use portable pumps to provide RPV/RCS/SG makeup as a means to provide a diverse capability beyond installed equipment. Provide information on how using SPC as an alternate means to feed the RPV conforms to the guidance in NEI 12-06, Section 3.2.2, Consideration 12, or clarify whether RBS has the capability to inject via portable pump.
AQ - 62	MESB-BOP-7: In the OIP the licensee states that as heated water is returned to the UHS from the plant and the fans are repowered, evaporation of the basin water will increase. Makeup to the basin will eventually be required and that this will be done via hauling of water from the Mississippi River using trucks provided by the RRC. Provide information on how this will be accomplished.
AQ - 64	Please clarify whether you plan to abide by the NEI position paper addressing mitigating strategies in shutdown and refueling modes that is dated September 18, 2013 (ADAMS Accession No. ML13273A514), and which has been endorsed by the NRC staff (ADAMS Accession No. ML13267A382). If not, please clarify how mitigating strategies for shutdown and refueling modes will be addressed and provide justification for the planned approach.

Audit Item Reference	Item Description
OIP - 1	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.

Audit Item Reference	Item Description
OIP - 2	The method for providing makeup to the RBS UHS is described on page 25 of 60 of the OIP. The original method was to haul water from the Mississippi River using trucks provided by the National Safer Response Center (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.
OIP - 3	Beyond-design basis external event impact on requirements in existing licensing documents will be determined based on input from the industry groups and direction form the NRC.
OIP - 4	Structure, content and details of the RRC playbook will be determined.
OIP - 9	A discussion of the ability of the SSW cooling tower, without powered fans, to provide adequate heat removal well into Phase 3 is included on OIP page 21 of 60. A discussion of repowering the Division 2 SSW basin fans via repowering ENS-SWG01B 4160V bus by a RRC PDG for the original Phase 3 strategy is provided on OIP page 25 of 60. FLEX design calculations have determined that repowering the Division 2 cooling towers is necessary at 72 hours following the ELAP. Due to the revision of the Phase 3 strategy, this will be accomplished by use of an RRC 800kW 480V PDG connected to 480V MCC ENSMCC16B. The action to re-power the cooling tower fans will be included as a time constraint in OIP Attachment 1A and in the OIP discussion of time constraints which starts on page 5 of 60 of the OIP. One of the 480V PDGs listed in the BWR Portable Equipment Phase 3 table will be designated for use as the primary power source for the SSW cooling tower fans.
OIP - 11	The need for evaluation of the seismic robustness of non-safety related class 4 piping located in RBS piping tunnels utilized in the FLEX strategy is identified on pages 20 and 21 of the OIP. The completed evaluation has confirmed that there are a number of pipe lines in the tunnels, including sections that are not considered seismically robust. The evaluation also identified that these piping sections can be isolated by closing five individual valves if the ELAP is initiated by a seismic event. RBS FLEX procedures will include directions to isolate the valves following a seismic event.

Audit Item Reference	Item Description
OIP - 13	While the following is not a change in the compliance strategy described in the OIP, it is a clarification with regard to the RBS FLEX strategy and the guidance of NEI 12-06. NEI 12- 06 Section 3.2.2, Consideration 13 states that regardless of installed coping capability, all plants will include the ability to use portable pumps to provide RPV/RCS/SG makeup as a means to provide a diverse capability beyond installed equipment. The RBS FLEX strategy does not include this capability, and thus, the crediting of installed SPC pumps for the RBS FLEX Phase 2 strategy is alternative method for satisfying the NEI 12-06 guidance. The use of the installed SPC pumps to provide RPV makeup is an acceptable alternative to a portable FLEX pump for the transitional phase of FLEX. The guidance states that the ELAP response is to be addressed with a combination of three categories of equipment: installed plant capability, portable on-site equipment, and off-site equipment resources. Only one phase of the response is limited to utilizing equipment from just one of the equipment categories. To ensure that there is enough time to deploy and implement portable equipment, Phase 1 can only use installed plant equipment. Even though Phase 2 and Phase 3 will utilize portable equipment (onsite for Phase 2 and offsite from RRC for Phase 3), there is no prohibition against the use of permanently installed equipment in those two phases, as long as it is robust with respect to design-basis external events.
SFPI RAI 3	For each of the mounting attachments required to attach 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.
SFPI RAI 5	Please provide information indicating the maximum expected ambient temperature in the room in which the sensor electronics will be located under [beyond-design basis] BDB conditions in which there is no ac power available to run Heating, Ventilation, and Air Conditioning (HVAC) systems, and whether the sensor electronics is capable of continuously performing its required functions under this expected temperature condition.
SFPI RAI 6	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 its required functions under this expected humidity condition.
SFPI RAI 7	Please provide a description of the specific method or combination of methods you intend to apply to demonstrate the reliability of the permanently installed equipment under BDB shock and vibration conditions.
SFPI RAI 9	Please provide analysis of the vendor analysis and seismic testing results and show that SFP level instrument performance reliability, following exposure to simulated seismic conditions representative of the environment anticipated for the SFP structures at River Bend, has been adequately demonstrated.

Audit Item Reference	Item Description
SFPI RAI 15	For the SFP level instrumentation displays located outside the main control room, please describe the evaluation used to validate 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, please 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.
SFPI RAI 17	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 for ensuring that necessary channel checks, functional tests, periodic calibration, and maintenance will be conducted for the level measurement system and its supporting equipment.
SFPI RAI 18	EMC compliance
SE #1	Please address the following items regarding the use of raw water sources for mitigating an ELAP event: a. Please discuss the quality of the water (e.g., suspended solids, dissolved salts) that will be used for primary makeup during ELAP events, accounting for the potential for increased suspended or dissolved material in some raw water sources during events such as flooding or severe storms. b. Please discuss whether instrumentation available during the ELAP event is capable of providing indication that inadequate core cooling exists for one or more fuel assemblies due to blockage at fuel assembly inlets or bypass leakage flowpaths. c. As applicable, please provide justification that the use of the intended raw water sources will not result in blockage of coolant flow across fuel assemblies and applicable bypass leakage flowpaths to an extent that would inhibit adequate core cooling. Or, if deleterious blockage at the core inlet cannot be precluded under ELAP conditions, then please discuss alternate means for assuring the adequacy of adequate core cooling in light of available indications. For example, will ELAP mitigation procedures be capable of ensuring top-down cooling of the reactor core?
SE #2	Verify that appropriate human factors are applied for the implementation of the FLEX strategies.
SE #3	Discuss strategy for swapping RCIC suction from SP to the UCP and justify that the strategy will be effective under ELAP conditions.

Part 3 – Specific Topics for Discussion:

1. Draft of RBS OPD/FIP
2. Training
3. Portable (FLEX) equipment maintenance and testing
4. RRC (SAFER) Response Plan for RBS

Proposed Schedule

Onsite Day 1, Monday, October 20, 2014

0800 Check in at site; Badging; Dosimetry

0900 Entrance meeting

0915 Licensee presentation of strategies

1230 Lunch

1330 NRC Audit Team Activities:

- Technical area break-out discussions between NRC and licensee staff in the areas of reactor systems, electrical, balance-of-plant/structures, SFPI, and others
- Review documents relating to open or confirmatory items, RAIs, codes, analyses, etc.
- NRC Mitigating Strategies/SFPI walk-throughs with licensee

1630 Team lead daily debrief/next day planning with licensee

Onsite Day 2, Tuesday, October 21, 2014

0800 Continue NRC Audit Team Activities

1200 Lunch

1300 Continue NRC Audit Team Activities

1630 Team lead daily debrief/next day planning with licensee

Onsite Day 3, Wednesday, October 22, 2014

0800 Continue NRC Audit Team Activities

1200 Lunch

1300 Continue NRC Audit Team Activities

1630 Team lead daily debrief/next day planning with licensee

Onsite Day 4, Thursday, October 23, 2014

0800 Continue NRC Audit Team Activities

1200 Lunch

1300 NRC Audit Team meeting

1430 NRC/Licensee pre-exit meeting

1700 NRC/Licensee exit meeting

responses to Order EA-12-051 in accordance with NRC NRR Office Instruction LIC-111, as discussed above.

The ongoing audit process, to include the in-office and onsite portions, allows the staff to assess whether it has enough information to make a safety evaluation of the Integrated Plans. The audit allows the staff to review open and confirmatory items from the mitigation strategies ISE, RAI responses from the spent fuel pool instrumentation ISE, the licensee's integrated plans, and other audit questions. Additionally, the staff gains a better understanding of submitted information, identifies additional information necessary for the licensee to supplement its plan, and identifies any staff potential concerns. The audit's onsite portion will occur prior to declarations of compliance for the first unit at each site.

This document outlines the on-site audit process that occurs after ISE issuance as licensees provide new or updated information via periodic updates, update audit information on e-portals, provide preliminary Overall Program Documents/Final Integrated Plans, and continue in-office audit communications with staff while proceeding towards compliance with the orders.

The staff plans to conduct an onsite audit at RBS in accordance with the enclosed audit plan from October 20 - 23, 2014.

If you have any questions, please contact me at 301-415-3204 or by e-mail at john.hughey@nrc.gov.

Sincerely,
/RA/
John Hughey, Project Manager
Orders Management Branch
Japan Lessons-Learned Division
Office of Nuclear Reactor Regulation

Docket No.: 50-458

Enclosure:
Audit plan

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NAME	JHughey	SLent	SBailey	BPham
DATE	09/30/14	09/30/14	10/01/14	09/30/14

OFFICE	NRR/JLD/JOMB/BC(A)	NRR/DORL/LPL4-2	NRR/JLD/JOMB/PM
NAME	MHalter	AWang	JHughey
DATE	09/30/14	09/30/14	10/01/14

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