



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

August 27, 2015

Mr. Eric McCartney
Site Vice President
NextEra Energy Point Beach, LLC
6610 Nuclear Road
Two Rivers, WI 54241-9516

SUBJECT: POINT BEACH NUCLEAR PLANT, UNITS 1 AND 2 - REPORT FOR THE
ONSITE AUDIT REGARDING IMPLEMENTATION OF MITIGATING
STRATEGIES RELATED TO ORDER EA-12-049 (TAC NOS. MF0725 AND
MF0726)

Dear Mr. McCartney:

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" (Agencywide Documents Access and Management System (ADAMS) Accession No. ML12054A736). The order requires holders of operating reactor licenses and construction permits issued under Title 10 of the *Code of Federal Regulations* Part 50 to submit for review an Overall Integrated Plan (OIP) including descriptions of how compliance with the requirements of Attachment 2 of the order will be achieved.

By letter dated February 22, 2013 (ADAMS Accession No. ML13053A401), NextEra Energy Point Beach, LLC (NextEra, the licensee) submitted its OIP for Point Beach Nuclear Plant, Units 1 and 2 (Point Beach) in response to Order EA-12-049. By letters dated August 28, 2013, February 28, 2014, August 28, 2014, and February 24, 2015 (ADAMS Accession Nos. ML13241A203, ML14062A073, ML14241A266, and ML15050A487, respectively), NextEra submitted its first four 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 Point Beach interim staff evaluation (ISE) (ADAMS Accession No. ML13338A510) on January 27, 2014, and continues with in-office and onsite portions of this audit.

The ongoing audits allow the staff to review open and confirmatory items from the mitigation strategies ISE, the licensee's integrated plans, and other audit questions. Additionally, the staff gains a better understanding of submitted and updated information, audit information provided on ePortals, and preliminary Overall Program Documents /Final Integrated Plans while identifying additional information necessary for the licensee to supplement its plan and staff potential concerns.


In support of the ongoing audit of the licensee's OIP, the NRC staff conducted an onsite audit at Point Beach from June 8-12, 2015, per the audit plan dated May 4, 2015 (ADAMS Accession No. ML15117A666), as supplemented, by letter dated May 14, 2015 (ADAMS Accession No. ML15133A501). The purpose of the onsite portion of the audit was to provide the NRC staff the opportunity to continue the audit review and gain key insights most easily obtained at the plant as to whether the licensee is on the correct path for compliance with the Mitigation Strategies order. The onsite activities included detailed analysis and calculation discussion, walk-throughs of strategies and equipment laydown, visualization of portable equipment storage and deployment, and staging and deployment of offsite equipment.

The May 14, 2015, letter acknowledged receipt of Point Beach's Order EA-12-051, "Order to Modify Licenses With Regard To Reliable Spent Fuel Pool Instrumentation," full compliance letter dated December 19, 2014 (ADAMS Accession No. ML14353A047), and clarified that the NRC staff would not perform an audit of the spent fuel pool instrumentation (SFPI). As stated in the May 4, 2015, audit plan, the onsite portion will occur prior to declarations of compliance for the first unit at each site. Therefore, the NRC staff utilized the request for additional information (RAI) process, as needed, to obtain additional information from NextEra in support of its review of Point Beach's OIP for EA-12-051. As a result of its review, the NRC staff issued a SFPI RAI dated July 2, 2015 (ADAMS Accession No. ML15187A246).

The enclosed audit report provides a summary of the activities for the onsite audit portion. Additionally, this report contains an attachment listing all open audit items currently under NRC staff review.

If you have any questions, please contact me at 301-415-5888 or by e-mail at Jason.Paige@nrc.gov.

Sincerely,

A handwritten signature in black ink, appearing to read 'Jason C. Paige', with a large, stylized 'P' and a horizontal line extending to the right.

Jason C. Paige, Project Manager
Orders Management Branch
Japan Lessons-Learned Division
Office of Nuclear Reactor Regulation

Docket Nos. 50-266 and 50-301

Enclosure:
Audit report

cc w/encl: Distribution via Listserv



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

AUDIT REPORT BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO ORDER EA-12-049 MODIFYING LICENSES
WITH REGARD TO REQUIREMENTS FOR
MITIGATION STRATEGIES FOR BEYOND-DESIGN-BASIS EXTERNAL EVENTS
NEXTERA ENERGY POINT BEACH, LLC
POINT BEACH NUCLEAR PLANT, UNITS 1 AND 2
DOCKET NOS. 50-266 AND 50-301

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" (Agencywide Documents Access and Management System (ADAMS) Accession No. ML12054A736). The order requires holders of operating reactor licenses and construction permits issued under Title 10 of the *Code of Federal Regulations* Part 50 to submit for review an Overall Integrated Plan (OIP) including descriptions of how compliance with the requirements of Attachment 2 of the order will be achieved.

By letter dated February 22, 2013 (ADAMS Accession No. ML13053A401), NextEra Energy Point Beach, LLC (NextEra, the licensee) submitted its OIP for Point Beach Nuclear Plant, Units 1 and 2 (Point Beach) in response to Order EA-12-049. By letters dated August 28, 2013, February 28, 2014, August 28, 2014, and February 24, 2015 (ADAMS Accession Nos. ML13241A203, ML14062A073, ML14241A266, and ML15050A487, respectively), NextEra submitted its first four 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 Point Beach interim staff evaluation (ISE) (ADAMS Accession No. ML13338A510) on January 27, 2014, and continues with in-office and onsite portions of this audit.

The ongoing audits allow the staff to review open and confirmatory items from the mitigation strategies ISE, the licensee's integrated plans, and other audit questions. Additionally, the staff gains a better understanding of submitted and updated information, audit information provided on ePortals, and preliminary Overall Program Documents (OPDs)/Final Integrated Plans (FIPs)

Enclosure

while identifying additional information necessary for the licensee to supplement its plan and staff potential concerns.

In support of the ongoing audit of the licensee's OIP, the NRC staff conducted an onsite audit at Point Beach from June 8-12, 2015, per the audit plan dated May 4, 2015 (ADAMS Accession No. ML15117A666), as supplemented, by letter dated May 14, 2015 (ADAMS Accession No. ML15133A501). The purpose of the onsite portion of the audit was to provide the NRC staff the opportunity to continue the audit review and gain key insights most easily obtained at the plant as to whether the licensee is on the correct path for compliance with the Mitigation Strategies order. The onsite activities included detailed analysis and calculation discussion, walk-throughs of strategies and equipment laydown, visualization of portable equipment storage and deployment, and staging and deployment of offsite equipment.

Following the licensee's declaration of order compliance, the NRC staff will evaluate the OIP, as supplemented, the resulting site-specific OPD/FIP, and, as appropriate, other licensee submittals based on the requirements in the order. The NRC staff will make a safety determination regarding Order EA-12-049 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 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. 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 order.

The May 14, 2015, letter acknowledged receipt of Point Beach's Order EA-12-051, "Order to Modify Licenses With Regard To Reliable Spent Fuel Pool Instrumentation," full compliance letter dated December 19, 2014 (ADAMS Accession No. ML14353A047) and clarified that the NRC staff would not perform an audit of the spent fuel pool instrumentation (SFPI). As stated in the May 4, 2015, audit plan, the onsite portion will occur prior to declarations of compliance for the first unit at each site. Therefore, the NRC staff utilized the request for additional information (RAI) process, as needed, to obtain additional information from NextEra in support of its review of Point Beach's OIP for EA-12-051. As a result of its review, the NRC staff issued a SFPI RAI dated July 2, 2015 (ADAMS Accession No. ML15187A246).

AUDIT ACTIVITIES

The onsite audit was conducted at the Point Beach facility from June 8, 2015, through June 12, 2015. The NRC audit team staff was as follows:

| Title | Team Member |
|-----------------------------|--------------------|
| Team Lead / Project Manager | Jason Paige |
| Technical Support | On Yee |
| Technical Support | Kerby Scales |
| Technical Support | Joshua Miller |
| Technical Support | Laura Okruhlik |

The NRC staff executed the onsite portion of the audit per the three part approach discussed in the May 4, 2015, plan, to include conducting a tabletop discussion of the site's integrated mitigating strategies compliance program, a review of specific technical review items, and discussion of specific program topics. Activities that were planned to support the above included detailed analysis and calculation discussions, walk-throughs of strategies and equipment laydown, visualization of portable equipment storage and deployment, and staging and deployment of offsite equipment.

AUDIT SUMMARY

1.0 Entrance Meeting (June 8, 2015)

At the audit entrance meeting, the NRC staff audit team introduced itself followed by introductions from the licensee's staff. The NRC audit team provided a brief overview of the audit's objectives and anticipated schedule.

2.0 Integrated Mitigating Strategies Compliance Program Overview

Per the audit plan and as an introduction to the site's program, the licensee provided a presentation to the NRC audit team titled "Point Beach Nuclear Power Plant Mitigating Strategies for Beyond Design Basis External Events." The licensee provided an overview of its strategy to maintain core cooling, containment, and SFP cooling in the event of a beyond-design-basis external event, and the plant modifications being done in order to implement the strategies. Also presented was the design and location of the FLEX equipment storage facility, the FLEX equipment that would be stored there, and the interface with the National SAFER Response Centers (NSRCs).

3.0 Onsite Audit Technical Discussion Topics

Based on the audit plan, and with a particular emphasis on the Part 2 "Specific Technical Review Items," the NRC staff technical reviewers conducted interviews with licensee technical staff, site walk-downs, and detailed document review for the items listed in the plan. Results of these technical reviews that require additional information from the licensee or still under NRC review are documented in the audit item status tables in Attachments 3 and 4, as discussed in the Conclusion section below.

3.1 Reactor Systems Technical Discussions and Walk-Downs

The NRC staff reviewed Point Beach's modeling of an extended loss of alternating current (ac) power (ELAP) and its ability to mitigate the event, including the computer code NOTRUMP used for the ELAP analysis and input parameters assumed to generate the results of the analysis. The licensee indicated that low-leakage reactor coolant pump (RCP) SHIELD shutdown seals will be installed, in which the SHIELD maximum leakage of 3 gallons per minute (gpm) is bounded by the NOTRUMP calculation. In addition, the portable charging pumps are rated at 10 gpm to provide reactor coolant system (RCS) makeup and will be deployed and connected before reflux cooling would occur. The licensee also confirmed through analysis that boration is not required within the first 24 hours of the event; however, the licensee plans to begin injecting borated water at 8 hours.

3.2 Electrical Technical Discussions and Walk-Downs

The NRC staff reviewed Point Beach's direct current (dc) load profile, FLEX diesel generator (DG) sizing calculations, manufactures specifications, and FLEX Support Guidelines (FSGs) to confirm that they are of sufficient capacity to supply the expected loads. As part of Phase 1, the NRC staff noted that the licensee will perform a battery load shed within 1 hour of an ELAP and complete the action within 2 hours to extend the battery coping times. In addition, the staff reviewed the FSGs and walked down the battery rooms to understand the effects of ventilation loss in the battery rooms. To prevent adverse effects on electrical equipment from high temperatures and the accumulation of hydrogen before it reaches 2 percent, the licensee indicated that they will provide battery room ventilation by installed ventilation systems or portable fans and ducting. As the licensee transitions from Phase 1, Point Beach will utilize the onsite 480V FLEX DGs as part of its Phase 2 strategy and NSRCs 4160V DGs as part of its Phase 3 strategy during an ELAP event. The staff walked down the primary and alternate connection points of the FLEX DGs to ensure electrical isolation will be maintained throughout the event.

3.3 SFPI Technical Discussions and Walk-Downs

As stated above, the May 14, 2015, letter acknowledged receipt of Point Beach's Order EA-12-051, "Order to Modify Licenses With Regard To Reliable Spent Fuel Pool Instrumentation," full compliance letter dated December 19, 2014 (ADAMS Accession No. ML14353A047) and clarified that the NRC staff would not perform an audit of the SFPI. In addition, the May 4, 2015, audit plan stated that the onsite portion will occur prior to declarations of compliance for the first unit at each site. Therefore, the NRC staff utilized the RAI process, as needed, to obtain additional information from NextEra in support of its review of Point Beach's OIP for EA-12-051. As a result of its review, the NRC staff issued a SFPI RAI dated July 2, 2015 (ADAMS Accession No. ML15187A246).

3.4 Other Technical Discussion Areas and Walk-Downs

- a. The licensee indicated that they upgraded the steam generator (SG) storage building for use as the primary FLEX equipment storage building (referred to as the FLEX storage building), in which the building is divided into two sections, north and south. The north and south end of the buildings is only connected through a missile protected labyrinth. To move equipment in and out of the FLEX storage building, the north end has missile barrier doors and the south end has a roll-up door. The north end is the credited FLEX building and is a fully protected, reinforced concrete structure that has been analyzed for seismic, wind, tornado and tornado missiles and flooding conditions. The south end is a similar structure except for the west end (i.e., the location of the roll-up door) of the wall is susceptible to failure from seismic and tornado events. The licensee indicated that the debris removal equipment (i.e., CAT950K wheel loader) will be stored in the south end of the building and plan on protecting the equipment by parking it farthest from the west end wall, with the front end and bucket facing the west wall to remove any potential debris from the wall failing. In addition, the licensee stated that the backup debris removal equipment will be located south of the FLEX storage building at a distance of at

least 1800 feet (ft). The separation distance is based on the final safety analysis report that documents a local tornado causing significant damage as having a width of 600 yards wide (1800 ft). By comparison the licensee stated that the National Oceanic and Atmospheric Administration's website lists the average tornado width for Green Bay as 121 yards. Lastly, the licensee noted that tornado paths typically move from the west to east which is perpendicular to the storage locations and the minimum separation distance (1800 ft).

During its walkdown, the NRC staff noted that the storage location of the CAT950K within the FLEX storage building is relatively large in comparison to the vehicle. Also, the staff noted that if the non-robust wall were to fail it would not collapse onto the debris removal equipment, since the equipment is parked farthest from the west end wall. Lastly, the staff noted that entrance into the south end of the FLEX storage building is accessible via the north end of the robust FLEX storage building through a missile protected labyrinth.

- b. The licensee completed a GOTHIC analysis to determine the containment conditions expected during an ELAP event. The analysis assumed a 3 gpm combined leakage from the RCP seals and RCS. The licensee concluded that the containment temperature and pressure at approximately 2 days (or 175,000 seconds) following an ELAP are 148 degrees F and 17.2 psia, respectively. However, the staff questioned the condition of containment after 175,000 seconds (e.g. does containment temperature continue to increase?), since the calculation results are only shown for 175,000 seconds. The licensee indicated that based on decreasing decay heat loads the temperature would not increase enough to challenge containment design limits. In addition, the licensee intends to use Phase 3 equipment to energize containment cooling, as needed.
- c. The licensee indicated that the condensate storage tanks (CSTs) have been modified to qualify them as seismic and tornado missile protected up to the 6 foot level. The CSTs are located in the turbine building and the building has been analyzed to withstand a seismic event. The structure and overhead crane has also been analyzed to withstand a seismic event with the crane at loaded capacity and does not fail. When not in use, the overhead crane is parked at the north or south end of the turbine hall, not directly above the CSTs. The turbine building interior office to the north and west of the CSTs on the turbine operating floor has been evaluated to withstand a seismic event. North of the CSTs there is the battery room that is seismic. South of the CSTs is an open area (truck access bay) to the floor below, so there is no equipment in the immediate area that would present a risk to the CSTs. The CSTs are mounted on top of a seismic Class 1 structure.

Regarding tornado protection, the CST upgrade is accounting for the tornado wind loads for tank anchorage loading. The Final Safety Analysis Report states tornado missiles are defined in Bechtel Topical Report B-TOP-3, which only accounts and defines horizontal missiles. The turbine building structure is analyzed for 360 mph wind with 1/3 of the siding remaining. In NEI-12-06, Figure 7-2 places Point Beach in an area with tornado winds of 182 mph. Based on the design of the turbine building and structures near the CSTs, falling or wind generated debris would be light weight in nature, mainly metal siding and ventilation ducting, and would not pose a threat to the CSTs. The CSTs are enclosed tanks, so light weight debris would be deflected by the roof of the

tanks and a substantial amount of debris is not expected to enter the tank. The CSTs are protected to an elevation greater than 25 ft above the surrounding grade, so the plank missile is the only concern. A missile strike above the protected elevation could penetrate the tank. Debris from the missile strike is expected to be only from the missile itself. A puncture of the metal tank may occur, but the deformed sections would remain attached. If debris does enter the tank, it would likely sink or float. The auxiliary feedwater (AFW) suction comes off the side of the tank, not the bottom; therefore, material that sinks would not pose a threat. Swap over to the alternate supply to the turbine-driven auxiliary feedwater (TDAFW) pump is done before vortexing occurs, which would prevent floating material from being drawn into the pump suction.

- d. The licensee stated that two safety related underground tanks are available each with a capacity of 35,000 gallons to supply fuel oil to FLEX equipment. Per technical specifications, the licensee is required to have at least 32,100 gallons of fuel oil available in each tank. The licensee stated that fuel oil can be transferred from these tanks via two transfer pumps (ac and dc driven) to a 500 gallon tank, which are on the refueling trailer. The transfer pumps have a capacity of 15 gpm and 20 gpm. The onsite fuel will be replenished, as needed, through the use of the licensee's existing fuel oil contracts. The licensee stated that the worst case fuel consumption is 154.5 gph. The staff noted that this consumption rate is based on all FLEX equipment (N and N+1) operating at full load continuously. For the worst case scenario, the licensee expects that 3,708 gallons of fuel will be consumed in 24 hours.
- e. Point Beach does not have backup nitrogen to operate the atmospheric dump valves (ADVs) during an event, so the ADVs will be operated manually. During its walkdown, the NRC staff questioned the façade and catwalk/platform integrity and the potential of an event (i.e., seismic, high wind) preventing access to the ADVs. The licensee evaluated the façade for a 360 mph tornado, with 2/3 of sheet metal becoming disconnected and 1/3 expected to remain in place. The 2/3 of sheet metal is presumed to go outward, but would create additional hazards/debris if it came inward/blocked catwalks. During the original construction of Point Beach, the platforms, connecting catwalks, and staircases in the facade were structurally evaluated as part of the original design. In addition, by letter dated September 26, 1986, "Seismic Qualifications of the Auxiliary Feedwater System at Point Beach Nuclear Plant, Units 1 and 2," additional review of the facade was completed for safe shutdown earthquake and the evaluation concluded that it remains intact.

4.0 Exit Meeting (June 12, 2015)

The NRC staff audit team conducted an exit meeting with the licensee staff following the closure of onsite audit activities. The NRC staff highlighted items reviewed and noted that the results of the onsite audit trip will be documented in this report. The following items that require additional information from the licensee or still under NRC review were discussed at the exit meeting (see Attachments 3 and 4 for additional information):

- a. ISE CI 3.2.1.5.A, ISE CI 3.2.2.A, ISE CI 3.2.4.2.A, ISE CI 3.2.4.6.A, ISE CI 3.2.4.6.B, 34-B, and SE Review Item 1, Containment and Ventilation Calculations
The NRC staff requested that the licensee make available for review the heat-up calculations for vital areas to address habitability and accessibility under ELAP

conditions (e.g., Primary Auxiliary Room, Control Room, Turbine Driven Auxiliary Feedwater Pump room, etc). During the onsite audit, the licensee made available the various calculations. After the conclusion of the onsite audit, the staff was able to review the provided information and has no additional questions.

b. ISE CI 3.2.1.9.B, RCS Boron Addition

The licensee performed a calculation to determine the portable skid charging pump for RCS injection via the chemical volume and control system piping and temporary hoses. The borated water would be delivered to the RCS charging lines through either the primary or alternate connection points and once in the RCS charging lines, valves can be manipulated to establish flow to either the Loop A RCS cold leg via the normal charging line or Loop B RCS cold leg via the auxiliary charging line. The primary pump suction would be from the refueling water storage tank (RWST) drain line and the secondary pump suction would be on the RWST supply lines to the high head safety injection pumps.

As part of the calculation, the licensee assessed the flow path associated with temporary hoses and installed piping to ensure that the portable skid charging pump is capable of supporting RCS FLEX strategies. The licensee's evaluation determined the needed RCS pressure to permit the portable skid charging pump, with a 2300 psi discharge and 15 gpm, to discharge through the primary or alternate connection points. The licensee's evaluation also determined the necessary water level in the RWST to ensure that the pump's net positive suction head requirements are met.

The licensee noted that they are revising the calculation to reflect the testing results of the charging pump. The staff requested that the licensee make available the revised calculation once complete.

c. 35-B, Battery Room Ventilation

The licensee performed a calculation to determine the effects of ventilation loss on the battery room. During its review of the calculation, the staff noted that the calculation assumed that doors will be opened to assist with ventilation. However, the procedures that will be used to mitigate ventilation loss during an ELAP event did not mention opening doors. The NRC staff discussed this inconsistency with the licensee and was entered into the licensee's corrective action program. After the conclusion of the onsite audit, the licensee made available the revised calculation, and the NRC staff is currently reviewing the calculation.

d. 63-B, Steam Generator FLEX Pump

The licensee performed a calculation to determine if the FLEX SG pump is capable of having a minimum flow rate of 300 gpm at a discharge pressure equal to the SG pressure, including any line losses with its connecting equipment. The suction will be from an 8 inch hose extended in Lake Michigan past the discharge flumes. During the onsite audit, the licensee noted that this calculation was still draft and a full version of the calculation was not available. The NRC staff requested that the licensee make available the calculation once complete. After the conclusion of the onsite audit, the licensee made available the calculation, and the NRC staff is currently reviewing the calculation.

e. 82-B, Structural Integrity of the ADVs Walkways

As mentioned above, Point Beach does not have backup nitrogen to operate the ADVs during an event, so the ADVs will be operated manually. During its walkdown, the NRC staff questioned the façade and catwalk/platform integrity and the potential of an event (i.e., seismic, high wind) preventing access to the ADVs. The licensee evaluated the façade for a 360 mph tornado, with 2/3 of sheet metal becoming disconnected and 1/3 expected to remain in place. The 2/3 of sheet metal is presumed to go outward, but would create additional hazards/debris if it came inward/blocked catwalks. During the original construction of Point Beach, the platforms, connecting catwalks, and staircases in the facade were structurally evaluated as part of the original design. In addition, by letter dated September 26, 1986, "Seismic Qualifications of the Auxiliary Feedwater System at Point Beach Nuclear Plant, Units 1 and 2," additional review of the facade was completed for safe shutdown earthquake and the evaluation concluded that it remains intact. After the conclusion of the onsite audit, the staff was able to review the provided information and has no additional questions.

f. 84-B, Uncontrolled Cooldown

The NRC staff requested that the licensee clarify whether consequential damage to an ADV or upstream associated piping directly resulting from the ELAP initiating event (e.g., tornado, earthquake) could result in an uncontrolled cooldown of the RCS. The licensee provided calculations for a main steam line break (MSLB) that were performed during Point Beach's power uprate review, however, no calculations were performed for RCS subcooling, subcriticality conditions concurrent with SG blowdown during ELAP conditions. Although the size of the MSLB bounds a sheared or damaged ADV, the available mitigating systems are reduced under ELAP conditions (e.g., safety injection (SI) unavailable). Therefore, it's unclear if the existing MSLB analysis bounds the ADV damage analysis during an ELAP. The licensee indicated that they will conduct an analysis of RCS conditions during/following uncontrolled cooldown during an ELAP scenario, and the staff requested to make available the analysis once complete.

CONCLUSION

The NRC staff completed all three parts of the May 4, 2015, onsite audit plan. Each audit item listed in Part 2 of the plan was reviewed by NRC staff members while onsite. In addition to the list of NRC and licensee onsite audit staff participants in Attachment 1, Attachment 2 provides a list of documents reviewed during the onsite audit portion.

In support of the continuing audit process as the licensee proceeds towards orders compliance for this site, Attachments 3 and 4 provide the status of all open audit review items, excluding SFPI items that the NRC staff is evaluating in anticipation of issuance of a combined safety evaluation for both the Mitigation Strategies and Spent Fuel Pool Level Instrumentation orders. The four sources for the audit items referenced below are as follows:

- a. Interim Staff Evaluation (ISE) Open Items (OIs) and Confirmatory Items (CIs)
- b. Audit Questions (AQs)
- c. Licensee-identified OIP Open Items (OIs)
- d. Additional Safety Evaluation (SE) needed information

The attachments provide audit information as follows:

- a. Attachment 1: List of NRC staff and licensee staff audit participants
- b. Attachment 2: List of documents reviewed during the onsite audit
- c. Attachment 3: Point Beach MS/SFPI SE Audit Items currently under NRC staff review and requiring licensee input as delineated
- d. Attachment 4: Point Beach MS/SFPI SE Audit Items currently under NRC staff review but not requiring further licensee input

While this report notes the completion of the onsite portion of the audit per the audit plan dated May 4, 2015, the ongoing audit process continues as per the letters dated August 28, 2013 and March 26, 2014, to all licensees and construction permit holders for both orders.

Additionally, while Attachments 3 and 4 provide a progress snapshot of the NRC staff's review of the licensee's OIPs, as supplemented, and as augmented in the audit process, the status and progress of the NRC staff's review may change based on licensee plan changes, resolution of generic issues, and other NRC staff concerns not previously documented. Changes in the NRC staff review will be communicated in the ongoing audit process.

Lastly, the licensee has identified open items that need to be completed to implement Order EA-12-049, and the staff expects that the licensee continue to provide updates on the status of the licensee identified open items in their 6-month updates or on the ePortal.

Attachments:

- 1. NRC and Licensee Staff Onsite Audit Participants
- 2. Onsite Audit Documents Reviewed
- 3. Point Beach MS/SFPI SE Audit Items currently under NRC staff review and requiring licensee input
- 4. Point Beach MS/SFPI SE Audit Items currently under NRC staff review but not requiring further licensee input

Onsite Audit Participants

NRC Staff:

| | |
|---------------|--------------|
| Jason Paige | NRR/JLD/JOMB |
| On Yee | NRR/JLD/JCBB |
| Kerby Scales | NRR/JLD/JERB |
| Joshua Miller | NRR/JLD/JERB |

| | |
|----------------|--------------|
| Laura Okruhlik | NRR/JLD/JERB |
| Duc Nguyen | NRR/JLD/JERB |
| Jack Ruthowski | RIII |

Point Beach Staff:

| | |
|------------------|---|
| Eric McCartney | Site Vice President |
| Robert Webber | Acting Plant General Manager |
| Brad Fromm | Fukushima Project Manager |
| Jim Schweitzer | Project Manager, FLEX Team |
| Mike Schug | Project Manager, FLEX Team |
| Jamie Weigandt | FLEX Project Team Senior Reactor Operator |
| Lori Christensen | Licensing Project Manager |
| Bryan Woyak | Acting Licensing Manager |
| Eric Schultz | Assistant Operations Manager |
| Ken Lemmens | Maintenance Programs Dept Head |
| Liz Abbott | Director Fleet Regulatory Projects |
| Ronnie Lingle | Fukushima Fleet Lead |
| Brian Kopetsky | Security Manager |
| Ron Seizert | Emergency Preparedness Manager |
| Judy Suchon | Nuclear Oversight Supervisor |
| Dan Forter | Manager of Projects |
| Patrick Wild | Design Engineering Manager |
| Craig Neuser | Engineering Systems Manager |
| Russ Parker | Chemistry Manager |
| Rick Welty | Radiation Protection Manager |
| Steve Catron | Fleet Licensing Manager (by teleconference) |
| John Laffrey | Corporate Licensing Project Manager (by teleconference) |
| James French | Corporate Licensing Intern (by teleconference) |
| Tom Rohe | Fleet Fukushima Project Manager (by teleconference) |
| Bill Herrman | FLEX Project Team |
| Duane Argall | Security Analyst, FLEX Team |

Documents Reviewed

- Draft FSG-1, Long Term RCS Inventory Control, Revision 0
- Draft FSG-3, Alternate Low Pressure Feedwater, Revision 0
- Draft FSG-7, Loss of Vital Instrumentation or Control Power Revision 0
- Point Beach Nuclear Plant FLEX Equipment Deployment Position Paper for Debris Removal and Impact on Deployment, Revision 1, May 22, 2015
- Draft FSG-5, Initial Assessment and FLEX Equipment Staging, Revision 0
- Calculation 2015-04236, Time Required to Switch TDAFW Pump Suction to SW, Revision 0
- Draft FSG-2, Alternate AFW Suction Source, Revision 0
- EC Number 272527, Turbine Driven Auxiliary Feedwater Pump 1P-29 Turbine and Governor Replacement, Revision 2
- EC Number 272529, Turbine Driven Auxiliary Feedwater Pump 2P-29 Turbine and Governor Replacement, Revision 0
- EC Number 278750, NRC Order Fukushima FLEX Unit 1 TDAFW Cross-Connection NRC 2013-0024 Letter, NRC Order EA-12-049, Revision 2
- EC Number 278751, NRC Order Fukushima FLEX Unit 1 TDAFW Cross-Connection NRC 2013-0024 Letter, NRC Order EA-12-049, Revision 3
- SPEC-M-205, Fukushima FLEX Steam Generator and Spent Fuel Pool Makeup Pumps, Revision 2
- Calculation No 2013-12974, Evaluation of Portable Skid Pump for High Pressure RCS Make-up, Revision 0
- OM 3.42, Control of WR SFP Level Instrumentation and Credited FLEX equipment, Revision 0
- EC279037, NRC Order Fukushima FLEX SGSF Evaluation and Upgrade for FLEX Storage, Revision 1
- SPEC-M-206, Fukushima FLEX High Pressure Injection Pumps, Revision 1
- SPEC-E-059, FLEX 480 VAC Portable Generator, Revision 2
- PBN-BFJF-13-098, Point Beach Extended Station Blackout Boron Requirements, Revision 1
- Calculation PBN-BFJF-14-146, Point Beach Unit 1 Cycle 36 Reload EC - SFP Decay Heat, Time to 200F on loss of cooling, and time to 6 inches above fuel top nozzle, Revision 0
- FSG-4, ELAP DC Bus Load Shed/Management, Revision 0
- Calculation N-93-041, Hydrogen Buildup in the Battery Room, Revision 3

Point Beach
Mitigation Strategies/Spent Fuel Pool Instrumentation Safety Evaluation Audit Items:

Audit Items Currently Under NRC Staff Review And Requiring Licensee Input

| Audit Item Reference | Item Description | Licensee Input Needed |
|-----------------------------|-------------------------|--|
| ISE CI 3.2.1.9.B | RCS Boron Addition | <p>The licensee assessed the flow path associated with temporary hoses and installed piping to ensure that the portable skid charging pump is capable of supporting RCS FLEX strategies. The licensee's evaluation determined the needed RCS pressure to permit the portable skid charging pump, with a 2300 psi discharge and 15gpm, to discharge through the primary or alternate connection points. The licensee's evaluation also determined the necessary water level in the RWST to ensure that the pump's net positive suction head requirements are met.</p> <p>The licensee noted that they are revising the calculation to reflect the testing results of the charging pump. The staff requested that the licensee make available the revised calculation once complete.</p> |

| Audit Item Reference | Item Description | Licensee Input Needed |
|----------------------|-----------------------|---|
| AQ 84 | Uncontrolled Cooldown | <p>The NRC staff requested that the licensee clarify whether consequential damage to an ADV or upstream associated piping directly resulting from the ELAP initiating event (e.g., tornado, earthquake) could result in an uncontrolled cooldown of the RCS. The licensee provided calculations for a main steam line break (MSLB) that were performed during Point Beach's power uprate review, however, no calculations were performed for RCS subcooling, subcriticality conditions concurrent with SG blowdown during ELAP conditions. Although the size of the MSLB bounds a sheared or damaged ADV, the available mitigating systems are reduced under ELAP conditions (e.g., SI unavailable). Therefore, it's unclear if the existing MSLB analysis bounds the ADV damage analysis during an ELAP. The licensee indicated that they will conduct an analysis of RCS conditions during/following uncontrolled cooldown during an ELAP scenario, and the staff requested to make available the analysis once complete.</p> |

Point Beach
Mitigation Strategies/Spent Fuel Pool Instrumentation Safety Evaluation Audit Items:

Audit Items Currently Under NRC Staff Review But Not Requiring Further Licensee Input

| Audit Item Reference | Item Description | Action |
|-----------------------------|--------------------------|---|
| AQ 35 | Battery Room Ventilation | The licensee performed a calculation to determine the effects of ventilation loss on the battery room. During its review of the calculation, the staff noted that the calculation assumed that doors will be opened to assist with ventilation. However, the procedures that will be used to mitigate ventilation loss during an ELAP event did not mention opening doors. The NRC staff discussed this inconsistency with the licensee and was entered into the licensee's corrective action program. After the conclusion of the onsite audit, the licensee made available the revised calculation, and the NRC staff is currently reviewing the calculation. |

| Audit Item Reference | Item Description | Action |
|----------------------|---------------------------|--|
| AQ 63 | Steam Generator FLEX Pump | <p>The licensee performed a calculation to determine if the FLEX steam generator (SG) pump is capable of having a minimum flow rate of 300 gpm at a discharge pressure equal to the SG pressure, including any line losses with its connecting equipment. The suction will be from an 8" hose extended in Lake Michigan past the discharge flumes. During the onsite audit, the licensee noted that this calculation was still draft and a full version of the calculation was not available. The NRC staff requested that the licensee make available the calculation once complete. After the conclusion of the onsite audit, the licensee made available the calculation, and the NRC staff is currently reviewing the calculation.</p> |

In support of the ongoing audit of the licensee's OIP, the NRC staff conducted an onsite audit at Point Beach from June 8-12, 2015, per the audit plan dated May 4, 2015 (ADAMS Accession No. ML15117A666), as supplemented, by letter dated May 14, 2015 (ADAMS Accession No. ML15133A501). The purpose of the onsite portion of the audit was to provide the NRC staff the opportunity to continue the audit review and gain key insights most easily obtained at the plant as to whether the licensee is on the correct path for compliance with the Mitigation Strategies order. The onsite activities included detailed analysis and calculation discussion, walk-throughs of strategies and equipment laydown, visualization of portable equipment storage and deployment, and staging and deployment of offsite equipment.

The May 14, 2015, letter acknowledged receipt of Point Beach's Order EA-12-051, "Order to Modify Licenses With Regard To Reliable Spent Fuel Pool Instrumentation," full compliance letter dated December 19, 2014 (ADAMS Accession No. ML14353A047), and clarified that the NRC staff would not perform an audit of the spent fuel pool instrumentation (SFPI). As stated in the May 4, 2015, audit plan, the onsite portion will occur prior to declarations of compliance for the first unit at each site. Therefore, the NRC staff utilized the request for additional information (RAI) process, as needed, to obtain additional information from NextEra in support of its review of Point Beach's OIP for EA-12-051. As a result of its review, the NRC staff issued a SFPI RAI dated July 2, 2015 (ADAMS Accession No. ML15187A246).

The enclosed audit report provides a summary of the activities for the onsite audit portion. Additionally, this report contains an attachment listing all open audit items currently under NRC staff review.

If you have any questions, please contact me at 301-415-5888 or by e-mail at Jason.Paige@nrc.gov.

Sincerely,

/RA/

Jason C. Paige, Project Manager
Orders Management Branch
Japan Lessons-Learned Division
Office of Nuclear Reactor Regulation

Docket Nos. 50-266 and 50-301

Enclosure:

Audit report

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| NAME | JPaige | SLent | BTitus (CRoque-Cruz for) |
| DATE | 08/27/15 | 07/27/15 | 08/27/15 |
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| NAME | JLehning (MMcConnell for) | MHalter | JPaige |
| DATE | 08/27/15 | 08/27/15 | 08/27/15 |

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