



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

November 12, 2015

Mr. Mano Nazar
President and Chief Nuclear Officer
Nuclear Division
NextEra Energy
P. O. Box 14000
Juno Beach, FL 33408-0420

SUBJECT: TURKEY POINT NUCLEAR GENERATING, UNITS 3 AND 4 - REPORT FOR THE ONSITE AUDIT REGARDING IMPLEMENTATION OF MITIGATING STRATEGIES AND RELIABLE SPENT FUEL POOL INSTRUMENTATION RELATED TO ORDERS EA-12-049 AND EA-12-051 (TAC NOS. MF0982, MF0983, MF0988, AND MF0989)

Dear Mr. Nazar:

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 26, 2013 (ADAMS Accession No. ML13072A038), Florida Power and Light Company (FPL, the licensee) submitted its Overall Integrated Plan (OIP) for Turkey Point Nuclear Generating, Units 3 and 4 (Turkey Point), in response to Order EA-12-049. By letters dated August 21, 2013, February 26, 2014, August 27, 2014, February 26, 2015, and August 11, 2015 (ADAMS Accession Nos. ML13248A311, ML14073A454, ML14253A162, ML15076A195, and ML15233A417, respectively), FPL submitted its first five 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 Turkey Point interim staff evaluation (ISE) (ADAMS Accession No. ML14002A160) on February 6, 2014, and continues with in-office and onsite portions of this audit.

By letter dated February 26, 2013 (ADAMS Accession No. ML130720690), the licensee submitted its OIP for Turkey Point in response to Order EA-12-051. By letter dated July 11, 2013 (ADAMS Accession No. ML13191A134), the NRC staff sent a request for additional information (RAI) to the licensee. By letters dated July 30, 2013, August 21, 2013, February 26, 2014, August 15, 2014, February 13, 2015, and August 11, 2015 (ADAMS Accession No. ML13224A160, ML13248A313, ML14073A066, ML14245A057, ML15075A023, and ML15233A418, respectively), the licensee submitted its RAI responses and six-month updates to the OIP. The NRC staff's review of these submittals led to the issuance of the Turkey Point ISE and RAI dated November 19, 2013 (ADAMS Accession No. ML13280A177). 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 audits allow 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 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 OIPs, as supplemented, the NRC staff conducted an onsite audit at Turkey Point from August 17 - 21, 2015, per the audit plan dated July 8, 2015 (ADAMS Accession No. ML15188A507). 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 and SFPI orders. The onsite activities included detailed analysis and calculation discussion, walk-throughs of strategies and equipment laydown, visualization of portable equipment storage and deployment, staging and deployment of offsite equipment, and physical sizing and placement of SFPI equipment.

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.

M. Nazar

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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 be 'JP' with a long horizontal flourish extending to the right.

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

Docket Nos. 50-250 and 50-251

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 ORDERS EA-12-049 AND EA-12-051 MODIFYING LICENSES
WITH REGARD TO REQUIREMENTS FOR
MITIGATION STRATEGIES FOR BEYOND-DESIGN-BASIS EXTERNAL EVENTS
AND RELIABLE SPENT FUEL POOL INSTRUMENTATION
FLORIDA POWER AND LIGHT COMPANY
TURKEY POINT NUCLEAR GENERATING, UNITS 3 AND 4
DOCKET NOS. 50-250 AND 50-251

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). 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.

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Enclosure

By letter dated February 26, 2013 (ADAMS Accession No. ML130720690), the licensee submitted its OIP for Turkey Point in response to Order EA-12-051. By letter dated July 11, 2013 (ADAMS Accession No. ML13191A134), the NRC staff sent a request for additional information (RAI) to the licensee. By letters dated July 30, 2013, August 21, 2013, February 26, 2014, August 15, 2014, February 13, 2015, and August 11, 2015 (ADAMS Accession No. ML13224A160, ML13248A313, ML14073A066, ML14245A057, ML15075A023, and ML15233A418, respectively), the licensee submitted its RAI responses and six-month updates to the OIP. The NRC staff's review of these submittals led to the issuance of the Turkey Point ISE and RAI dated November 19, 2013 (ADAMS Accession No. ML13280A177). 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 audits allow 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 and updated information, audit information provided on ePortals, and preliminary Overall Program Documents (OPDs)/Final Integrated Plans (FIPs) 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 OIPs, as supplemented, the NRC staff conducted an onsite audit at Turkey Point from August 17-21, 2015, per the audit plan dated July 8, 2015 (ADAMS Accession No. ML15188A507). 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 and SFPI orders. The onsite activities included detailed analysis and calculation discussion, walk-throughs of strategies and equipment laydown, visualization of portable equipment storage and deployment, staging and deployment of offsite equipment, and physical sizing and placement of SFPI equipment.

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 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, Revision 1, "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 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 ACTIVITIES

The onsite audit was conducted at the Turkey Point facility from August 17, 2015, through August 21, 2015. The NRC audit team staff was as follows:

Title	Team Member
Team Lead / Project Manager	Jason Paige
Technical Support	Garry Armstrong
Technical Support	Kerby Scales
Technical Support	Laura Okruhlik
Technical Support	Duc Nguyen

SUPPLEMENTAL MEMBER

Title	Team Member
Deputy Division Director	Mike Franovich

The NRC staff executed the onsite portion of the audit per the three part approach discussed in the July 8, 2015, plan, to include conducting a tabletop discussion of the site's integrated mitigating strategies (MS) 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, staging and deployment of offsite equipment, and physical sizing and placement of SFPI equipment.

AUDIT SUMMARY

1.0 Entrance Meeting (August 17, 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 "Turkey Point Nuclear Power Plant: Mitigating Strategies for Design Basis External Events and Spent Fuel Pool Instrumentation." 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 (BDBEE), 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, the interface with the National SAFER Response Centers (NSRCs), and the spent fuel pool level indication modification.

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 Turkey Point’s modeling of an extended loss of all alternating current (ac) power (ELAP) and its ability to mitigate the event, including the computer code used and input parameters assumed to generate the results of the analysis. The licensee is installing Flowserve low leakage reactor coolant pump (RCP) seals. The staff noted that the licensee performed a plant-specific analysis with the RETRAN-3D code, rather than relying upon the generic NOTRUMP calculations in WCAP-17601-P, “Reactor Coolant System Response to the Extended Loss of AC Power Event for Westinghouse, Combustion Engineering and Babcock & Wilcox NSSS Designs.” An existing RETRAN-3D model for Turkey Point was upgraded to current best estimate conditions for the plant. The licensee’s analysis predicted 36 hours until the onset of reflux cooling. The licensee indicated that reactor coolant system (RCS) injection will occur via the charging pumps within 13 hours.

Turkey Point is one of a small number of sites using RETRAN-3D to model an ELAP event. During the exit meeting, the staff indicated that they have no additional questions regarding FPL’s use of RETRAN-3D. However, the staff is tracking this item (ISE CI 3.2.1.B) under Attachment 4, Turkey Point MS/SFPI SE Audit Items currently under NRC staff review but not requiring further licensee input, to ensure sufficient time to complete the review of the adequacy of the RETRAN-3D code modeling.

3.2 Electrical Technical Discussions and Walk-Downs

The NRC staff reviewed Turkey Point’s load shedding procedures, FLEX diesel generator (DG) sizing calculations, manufacture’s specifications, and FLEX Support Guidelines (FSGs) to confirm that they are of sufficient capacity to supply the expected loads. The safety-related direct current (dc) system will be utilized initially to mitigate an ELAP event. The dc system consists of 125 V batteries, chargers, and dc buses separated into four separate and redundant trains that are common to both units. The licensee calculated that the dc system can provide power to the required BDBEE loads for at least 10 hours given that load shedding is completed within 90 minutes of an ELAP being declared. The licensee plans to connect the FLEX DGs to repower the battery chargers within 8 hrs. To confirm that the FLEX DGs have sufficient capacity to supply the loads, the licensee calculated the loads to mitigate an ELAP event. For Phase 2, the loads for Units 3 and 4 are 320-kilowatt (kW) and 290-kW, respectively. For phase 3, the loads are 778-kW per unit. To supply the expected loads, the licensee noted that they have three portable 550-kW FLEX DGs, several portable 6-kW FLEX DGs onsite, and four 1-MW FLEX DGs (2 per unit) that will be provided by NSRCs.

3.3 SFPI Technical Discussions and Walk-Downs

The NRC staff walked down the SFP area, SFPI locations, and related equipment mounting areas. No concerns were identified during the walk-downs.

3.4 Other Technical Discussion Areas and Walk-Downs

- a. The licensee indicated that the refueling water storage tanks (RWSTs) are seismically protected, but vulnerable to tornado missile events. The licensee stated that intervening structures and separation of the two RWSTs would provide some protection from tornado missiles, however, the staff noted during the walkdown that the separation of the two RWSTs is not significant such that there is a possibility that a wind driven missile from a high wind event could impact both tanks. The licensee did provide details on the new FLEX deep well, which would provide the protected source of water from all hazards that can be used as a source to the boric acid storage tanks (BASTs) to create borated water for RCS injection through the charging pumps. The RWSTs would be used if unaffected by the tornado missiles, but the licensee has a FLEX strategy in place to utilize the FLEX well pump and hoses to draw suction from the FLEX well for RCS makeup.
- b. The licensee provided details on tanks located throughout the site and their potential to cause large internal floods. The licensee identified the demineralized water storage tank (DWST), the condensate storage tanks (CSTs), RWSTs, primary water storage tanks (PWTs), and raw water storage tanks (RWTs) as the sources that could gravity drain near the Units. The failure of the DWST would cause the water to drain towards the discharge canal and would not impact the deployment and location of FLEX pump since the connections are made above the flood level and the pooling of water would dissipate by the time of deployment. The failure of the Unit 4 CST is near the location where the FLEX well hoses would be deployed, but as with the DWST, the deployment occurs well after any pooling of water would drain away from the location before the hoses are deployed. The RWSTs and PWTs would also have any pooling of water drain away from the location of where the SFP makeup hoses would be deployed since the deployment occurs almost 20 hours after ELAP occurs according to the licensee's mitigation timeline. The licensee does not credit any ac-powered equipment to mitigate any flooding from these sources, since the site's natural design allows for drainage away from the sources upon rupture, therefore, not impacting any areas needed for FLEX strategies at the times of their respective deployment.
- c. The licensee analyzed the containment response (temperature and pressure) using Modular Accident Analysis Program (MAAP) during a BDBEE with the plant in operational modes 1-4. The analysis provides a containment temperature and pressure profile duration of 120 hours (5 days). The licensee's results of the MAAP analysis show that the maximum containment temperature reached was 188 degrees °F and the maximum containment pressure reached was 18.8 psia, which are both below their respective design limits.

In addition, the licensee analyzed the containment response during a BDBEE with the plant in operational modes 5 and 6. The licensee's current strategy during Modes 5 and 6 is to utilize a vent path through an open air lock or equipment hatch, instead of

containment spray to prevent excessive pressurization w/o steam generator heat removal. The vent path is established prior to core boiling, and thereby, envelopes the sequence of events timeline identified for modes 5 and 6 without steam generator heat removal.

- d. The licensee noted that the charging pumps will require cooling water flow to keep the charging pump oil cooled for full speed operation after an ELAP. The licensee calculated the amount of cooling flow needed to supply the charging pumps. The licensee determined that the cooling flow needed is 15.2 gallons per minute (gpm) for full speed operation. The licensee intends to use the water from the new FLEX well using the FLEX pump, which can supply over 20 gpm of flow to support the cooling function. The normal water source used for cooling is the component cooling water system with a procedural backup from the service water system. However, the component cooling water system and the service water pumps will not be available due to the ELAP. As stated above, the water from the new FLEX well is a protected water source from all external hazards.
- e. The licensee provided details on its overall refueling strategy for FLEX equipment after an ELAP. The licensee will utilize a diesel fuel oil refueling trailer to obtain fuel from the Unit 4 diesel oil storage tank to refuel the various FLEX equipment. The licensee noted that the refueling trailer has a capacity of 1000 gallons of fuel oil. The portable equipment will be fully fueled and the refueling trailer will be partially filled. This allows for operation of the FLEX equipment for about 13 hours after an ELAP is declared before refueling is required. The available fuel oil on-site in the Unit 4 emergency diesel generator storage tanks is 34,700 gallons, which can supply up to 12 days for all of the FLEX equipment until off-site fuel oil delivery is needed.
- f. The licensee described the CSTs as Class I structures designed to withstand the design basis seismic and wind events. The CSTs are connected to the auxiliary feedwater (AFW) pumps such that any of the three pumps can take suction from either tank and a single pump can supply both units. For a tornado missile, the current licensing basis credits the separation and redundancy of the tanks along with the versatility of the AFW system. The tanks are located on the opposite end of the turbine building, an approximate separation distance of 400 feet. The licensee also noted that there are intervening structures including the security barriers that provide physical protection for the tanks. Also, the tanks are on elevated concrete foundations protecting them from a car missile, which is in the missile spectra for Turkey Point. Lastly, check valves prevent drainage of the unaffected tank.
- g. The staff walked down the location of the FLEX DG electrical connection boxes to ensure that they are protected from all hazards. During the walkdown, the staff noted that the primary and alternate connection boxes are permanently installed in close proximity to each other and possibly susceptible to damage from a common hazard. The staff was concerned with this arrangement and requested that the licensee provide reasonable assurance that at least one connection will be available after a BDBEE. The licensee provided justification that surrounding structures provides protection of the boxes to ensure at least one connection box will be available. In addition, the licensee indicated that they have the capability to directly connect the FLEX DGs to the electrical

buses to repower equipment that is being credited to mitigate an ELAP event, if the connection boxes are not available.

4.0 Exit Meeting (August 21, 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 OI 3.2.1.9.A, RCS Injection

The staff reviewed Turkey Point's RCS inventory coping strategy, which involves an alternate approach to NEI 12-06. During the onsite audit, the licensee indicated that Turkey Point's strategy solely relies on repowering one of three installed charging pumps. The staff questioned if diversity is present in the licensee's RCS strategy, since it relies on charging pumps only and no portable pumps supplying RCS makeup among the equipment available in Phase 2, nor among the equipment being requested from the NSRCs for Phase 3. After the conclusion of the onsite audit, the licensee indicated that they are revising their strategy to have the capability to inject into the RCS using a NSRC high pressure pump and are in the process of completing a hydraulic analysis of the pump. The staff requested that the licensee make available details of the revised strategy (connection points, flow path, etc.) and the hydraulic analysis.

b. ISE CI 3.2.1.2.A and AQ 52-c, RCP Seals

The staff reviewed the RCP seal leakage rate of one gpm/seal for the FlowServe low leakage seals used in the ELAP analysis. During its review, the staff requested that the licensee identify an alternate, independent RCS injection flow path, since their strategy only relied on the normal flow path of the charging pumps. The licensee identified the RCP seal line as an alternate flow path and verified that there are no adverse effects of using the seal line as an RCS injection path. After the conclusion of the onsite audit, the licensee included the RCP seal flow path in the RCS makeup strategy procedures. The staff has no additional questions regarding the alternate RCS injection flow path using the RCP seal line.

Due to a number of plants using Flowserve low leakage seals, Flowserve submitted a white paper on the generic use of the seals that plants can reference. The staff is currently reviewing the generic use of the Flowserve low leakage seals.

CONCLUSION

The NRC staff completed all three parts of the July 8, 2015, onsite audit plan. Each audit item listed in Part 2 of the plan was reviewed by NRC staff members while on site. 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 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 five 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 Overall Integrated Plan (OIP) Open Items (OIs)
- d. Spent Fuel Pool Level Instrumentation Requests for Additional Information (RAIs)
- e. 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: Turkey Point MS/SFPI SE Audit Items currently under NRC staff review and requiring licensee input as delineated
- d. Attachment 4: Turkey Point 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 July 8, 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 Orders EA-12-049 and EA-12-051, 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. Turkey Point MS/SFPI SE Audit Items currently under NRC staff review and requiring licensee input
4. Turkey Point 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
Garry Armstrong	NRR/JLD/JCBB
Kerby Scales	NRR/JLD/JERB

Laura Okruhlik	NRR/JLD/JERB
Duc Nguyen	NRR/JLD/JERB
Mike Franovich	NRR/JLD

Turkey Point Staff:

Tom Summers	Site Vice President
Chris Domingos	Plant Manager
Sergio Chaviano	Turkey Point Fukushima Project Manager
Ronnie Lingle	Fleet Fukushima Project Director
Jack Hoffman	Project Engineer
Bruce Beisler	FLEX Project
Paul Banaszak	FLEX Project
Kevin O'Hare	Emergency Preparedness Manager
Rich Tucker	Operations
Gerard Slaby	Procedures
Vincent Lenoir	Engineering
Fabiola Montanez	FLEX Project
Terry White	FLEX Project
Tom Rohe	Fleet Fukushima Project Manager
Alvin Robertson	Westinghouse
Joseph McGuinness	Operations
Boris Bazan	Emergency Preparedness
Catherine Buller	Projects
Stavroula Mihalakea	Licensing
Luis Reyes	Operations
Tim Stopher	Security
Joseph Byerly	Maintenance
Adam Law	Operations
Moise Bartoli	Operations

Documents Reviewed

- Calculation 620.3, Turkey Point EOP/FSG Setpoints, Revision 0
- Calculation FPL-CP-018, Turkey Point RETRAN-30 Best Estimate ELAP Analysis, Revision 0
- Calculation PTN-BFSM-14-010, FLEX Strategy: Charging Pump Cooler Minimum Flow and Borated Water Makeup Minimum Flow, Revision 2
- Procedure O-FSG-05, Initial Assessment and FLEX Equipment Staging, Revision 0
- Calculation NEE076-CALC-001, MAAP4.0.7 Mode 5 Containment Pressure Control Analysis for Plant Turkey Point Units 3 and 4, Revision 0
- Calculation FPL077-CALC-003, MAAP4.0.7 Containment Analysis for Plant Turkey Point Units 3 and 4, Revision 0
- Document FLEX-AA-100, FLEX Equipment PM Basis Program, Revision 0
- Document FLEX –AA-100-10006, FLEX 480V Diesel (TAD1353GE and TAW1643GE), Revision 0
- Document FLEX-AA-100-10007, Conditioning FLEX Equipment Diesel Fuel Oil, Revision 0
- EC 277973, Seismic Walkdown Report in Response to 50.54(f) Information Request Regarding Fukushima NTTF Recommendation 2.3: Seismic, Revision 0
- EC 28129516, PTN-ENG-SECS-13-025, Revision. 1, Turkey Point Seismic Hazard and Screening Report, Revision 0
- EC 280951, PTN Fukushima FLEX Equipment Storage Building, Revision 0
- Calculation FPL077-CALC-005, Turkey Point NGS Control Building Heatup for Extended Loss of AC Power, Revision 0
- Procedure FSG-99, FSG Supplemental Guidance, Revision 0
- Procedure O-FSG-04, ELAP DC Bus Load Shed/Management, Revision 0
- Calculation FPL065-CALC-009, Turkey Point Battery Discharge Capacity During Extended Loss of AC Power, Revision 2
- Procedure ECA-0.0, Loss of all AC Power, Revision 2
- EC-279532, Unit 3 Fukushima FLEX Modifications – Electrical, Revision 3
- EC-279533, Unit 4 Fukushima FLEX Modifications - Electrical, Revision 2
- EC-280301, Unit 3 and Unit 4 Fukushima FLEX Strategy Implementation Umbrella Modification, Revision 0
- FLEX-AA-100, Draft: FLEX equipment PM Basis Program, Revision 1
- EC280521-C-004, Spent Fuel Pool Plan View at Elevation 58'-0, Revision 1
- EC280521-E-003, Conduit Routing Overview, Revision 1
- EC280521-C-001, Aux. Bldg. Room Plan View, Revision 0
- Calculation CN-PEUS-14-14, Seismic Analysis of the SFP Mounting Bracket at Turkey Point Plant Nuclear Generating Units 3 & 4, Revision 1
- FPL Specification No. 5177-C001, Seismic Response Spectra Containment Building, Control Building, and Auxiliary Building for Turkey Point Units 3 & 4, Revision 1
- WNA-TP-00189-GEN, Spent Fuel Pool Instrumentation System Standard Product Integrated Functional Test Plan, Revision 3

Turkey Point
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 OI 3.2.1.9.A	RCS Injection	<p>The staff reviewed Turkey Point's RCS inventory coping strategy, which involves an alternate approach to NEI 12-06. During the onsite audit, the licensee indicated that Turkey Point's strategy solely relies on repowering one of three installed charging pumps. The staff questioned if diversity is present in the licensee's RCS strategy, since it relies on charging pumps only and no portable pumps supplying RCS makeup among the equipment available in Phase 2, nor among the equipment being requested from the National SAFER Response Centers (NSRCs) for Phase 3. After the conclusion of the onsite audit, the licensee indicated that they are revising their strategy to have the capability to inject into the RCS using a NSRC high pressure pump and are in the process of completing a hydraulic analysis of the pump. The staff requested that the licensee make available details of the revised strategy (connection points, flow path, etc.) and the hydraulic analysis.</p>

**Turkey Point
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
ISE CI 3.2.1.B	ELAP Modelling	Turkey Point is one of a small number of sites using RETRAN-3D to model an ELAP event. During the exit meeting, the staff indicated that they have no additional questions regarding FPL's use of RETRAN-3D. However, the staff is tracking this item to ensure sufficient time to complete the review of the adequacy of the RETRAN-3D code modeling.
ISE CI 3.2.1.2.A AQ 52-c	RCP Seals	Due to a number of plants using Flowserve low leakage seals, Flowserve submitted a white paper on the generic use of the seals that plants can reference. The staff is currently reviewing the generic use of the Flowserve low leakage seals.

M. Nazar

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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. 50-250 and 50-251

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