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

May 23, 2014

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

SUBJECT: ST. LUCIE NUCLEAR PLANT, UNITS 1 AND 2 - STAFF ASSESSMENTS OF THE SEISMIC WALKDOWN REPORTS SUPPORTING IMPLEMENTATION OF NEAR-TERM TASK FORCE RECOMMENDATION 2.3 RELATED TO THE FUKUSHIMA DAI-ICHI NUCLEAR POWER PLANT ACCIDENT (TAC NOS. MF0169 AND MF0170)

Dear Mr. Nazar:

On March 12, 2012, the U.S. Nuclear Regulatory Commission (NRC) issued a request for information letter per Title 10 of the *Code of Federal Regulations,* Subpart 50.54(f) (the 50.54(f) letter). The 50.54(f) letter was issued to power reactor licensees and holders of construction permits requesting addressees to provide further information to support the NRC staff's evaluation of regulatory actions to be taken in response to lessons learned from Japan's March 11, 2011, Great Tōhoku Earthquake and subsequent tsunami. The request addressed the methods and procedures for nuclear power plant licensees to conduct seismic and flooding hazard walkdowns to identify and address degraded, nonconforming, or unanalyzed conditions through the corrective action program, and to verify the adequacy of the monitoring and maintenance procedures.

By letter dated November 27, 2012, Florida Power and Light Company (FPL) submitted its Seismic Walkdown Reports for each unit as requested in Enclosure 3 of the 50.54(f) letter for the St. Lucie Plant, Units 1 and 2. By letter dated December 3, 2013, FPL provided a response to the NRC request for additional information so that the staff could complete its assessments.

The staff acknowledges that the licensee provided an acceptable schedule to complete the walkdown activities in Appendix E of the walkdown report for any delayed items, and to submit the results of these activities in June 2014. The NRC staff reviewed the information provided to date and, as documented in the enclosed staff assessment, determined that sufficient information was provided to be responsive to Enclosure 3 of the 50.54(f) letter.

If you have any questions, please contact me at 301-415-1447 or by e-mail at Farideh.Saba@nrc.gov.

Sincerely,

(for)

Farideh E. Saba, Senior Project Manager
Plant Licensing Branch II-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos. 50-335 and 50-389

Enclosures:
1. Staff Assessment of Seismic Walkdown Report for Unit 1
2. Staff Assessment of Seismic Walkdown Report for Unit 2

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STAFF ASSESSMENT OF SEISMIC WALKDOWN REPORT

NEAR-TERM TASK FORCE RECOMMENDATION 2.3 RELATED TO

THE FUKUSHIMA DAI-ICHI NUCLEAR POWER PLANT ACCIDENT

FLORIDA POWER AND LIGHT COMPANY

ST LUCIE NUCLEAR PLANT, UNIT 1

DOCKET NO. 50-335

1.0 INTRODUCTION

On March 12, 2012,[1] the U.S. Nuclear Regulatory Commission (NRC) issued a request for information per Title 10 of the *Code of Federal Regulations*, Subpart 50.54(f) (the 50.54(f) letter) to all power reactor licensees and holders of construction permits in active or deferred status. The request was part of the implementation of lessons learned from the accident at the Fukushima Dai-ichi nuclear power plant. Enclosure 3, "Recommendation 2.3: Seismic,"[2] to the 50.54(f) letter requested licensees to conduct seismic walkdowns to identify and address degraded, nonconforming, or unanalyzed conditions using the corrective action program (CAP), verify the adequacy of monitoring and maintenance procedures, and report the results to the NRC.

The 50.54(f) letter requested licensees to provide the following:

a. Information concerning the plant-specific hazard licensing bases and a description of the protection and mitigation features considered in the licensing basis evaluation.

b. Information related to the implementation of the walkdown process.

c. A list of plant-specific vulnerabilities identified by the Individual Plant Examination of External Events (IPEEE) program and a description of the actions taken to eliminate or reduce them.

d. Results of the walkdown including key findings and identified degraded, nonconforming, or unanalyzed conditions.

e. Any planned or newly installed protection and mitigation features.

f. Results and any subsequent actions taken in response to the peer review.

In accordance with the 50.54(f) letter, Enclosure 3, Required Response Item 2, licensees were required to submit a response within 180 days of the NRC's endorsement of the seismic

[1] Agencywide Documents Access and Management System (ADAMS) Accession No. ML12053A340
[2] ADAMS Accession No. ML12056A049

walkdown process. By letter dated May 29, 2012,[3] the Nuclear Energy Institute staff submitted Electric Power Research Institute document 1025286, "Seismic Walkdown Guidance for Resolution of Fukushima Near-Term Task Force Recommendation 2.3: Seismic," (walkdown guidance) to the NRC staff to consider for endorsement. By letter dated May 31, 2012,[4] the NRC staff endorsed the walkdown guidance.

By letter dated November 27, 2012,[5] Florida Power and Light Company (the licensee) provided a response to Enclosure 3 of the 50.54(f) letter Required Response Item 2, for St. Lucie Nuclear Plant Unit 1 (St. Lucie-1). The NRC staff reviewed the walkdown report and determined that additional supplemental information would assist the staff in completing its review. In a letter dated November 1, 2013,[6] the NRC staff requested additional information to gain a better understanding of the processes and procedures used by the licensee in conducting the walkdowns and walk-bys. The licensee responded to the NRC staff request by letter dated December 3, 2013.[7]

The NRC staff evaluated the licensee's submittals to determine if the information provided in the walkdown report met the intent of the walkdown guidance and if the licensee responded appropriately to Enclosure 3 of the 50.54(f) letter.

2.0 REGULATORY EVALUATION

The structures, systems, and components (SSCs) important to safety in operating nuclear power plants are designed either in accordance with, or meet the intent of Appendix A to 10 CFR Part 50, General Design Criterion (GDC) 2: "Design Bases for Protection Against Natural Phenomena"; and Appendix A to 10 CFR Part 100, "Reactor Site Criteria." GDC 2 states that SSCs important to safety at nuclear power plants shall be designed to withstand the effects of natural phenomena such as earthquakes, tornadoes, hurricanes, floods, tsunami, and seiches without loss of capability to perform their safety functions.

For initial licensing, each licensee was required to develop and maintain design bases that, as defined by 10 CFR 50.2, identify the specific functions that an SSC of a facility must perform, and the specific values or ranges of values chosen for controlling parameters as reference bounds for the design.

The design bases for the SSCs reflect appropriate consideration of the most severe natural phenomena that have been historically reported for the site and surrounding area. The design bases also reflect sufficient margin to account for the limited accuracy, quantity, and period of time in which the historical data have been accumulated.

The current licensing basis is the set of NRC requirements applicable to a specific plant, including the licensee's docketed commitments for ensuring compliance with, and operation within, applicable NRC requirements and the plant-specific design basis, including all modifications and additions to such commitments over the life of the facility operating license.

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[3] ADAMS Package Accession No. ML121640872
[4] ADAMS Accession No. ML12145A529
[5] ADAMS Accession No. ML123400400
[6] ADAMS Accession No. ML13304B418
[7] ADAMS Accession No. ML13346A157

3.0 TECHNICAL EVALUATION

3.1 Seismic Licensing Basis Information

The licensee provided information on the plant-specific licensing basis for the Seismic Category I SSCs for St. Lucie-1 in Section 2 of the walkdown report. Consistent with the walkdown guidance, the staff noted that the report includes a summary of the Operating Basis Earthquake (OBE) and Design Basis Earthquake (DBE) as well as a description of the codes, standards, and methods that were used in the design of the Seismic Category I SSCs for meeting the plant-specific seismic licensing basis requirements. The NRC staff reviewed Section 2 of the walkdown report, focusing on the summary of the OBE, DBE and the design codes used in the design.

Based on the NRC staff's review, the staff concludes that the licensee has provided information on the plant-specific seismic licensing basis and a description of the protection and mitigation features considered in the licensing bases evaluation consistent with Section 8, Submittal Report, of the walkdown guidance.

3.2 Seismic Walkdown Methodology Implementation

Section 2, Personnel Qualifications; Section 3, Selection of SSCs; Section 4, Seismic Walkdowns and Area Walk-Bys; and Section 5, Seismic Licensing Basis Evaluations, of the walkdown guidance provide information to licensees regarding the implementation of an appropriate seismic walkdown methodology. By letter dated July 9, 2012,[8] the licensee confirmed that it would utilize the walkdown guidance in the performance of the seismic walkdowns at St. Lucie-1.

The walkdown report dated November 27, 2012, did not identify deviations from the walkdown guidance.

The NRC staff reviewed the following sections of the walkdown methodology implementation provided in the walkdown report:

- Personnel Qualifications
- Development of the Seismic Walkdown Equipment Lists (SWELs)
- Implementation of the Walkdown Process
- Licensing Basis Evaluations and Results

3.2.1 Personnel Qualifications

Section 2, Personnel Qualifications, of the walkdown guidance provides licensees with qualification information for personnel involved in the conduct of the seismic walkdowns and area walk-bys.

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[8] ADAMS Accession No.ML12192A519

The NRC staff reviewed the information provided in Section 3, Table 3-1, and Appendices A and F of the walkdown report, which includes the walkdown personnel and their qualifications. Specifically, the staff reviewed the summary of the background, experience, and level of involvement for the following personnel involved in the seismic walkdown activities: equipment selection personnel, seismic walkdown engineers (SWEs), licensing basis reviewers, IPEEE reviewers, peer review team, and operations staff.

Based on the review of the licensee's submittals, the NRC staff concludes that those involved in the seismic walkdown activities have the appropriate seismic background, knowledge and experience, as specified in Section 2 of the walkdown guidance.

3.2.2 Development of the SWEL

Section 3, Selection of SSCs, of the walkdown guidance provides information to licensees for selecting the SSCs that should be placed on the SWELs, so that they can be walked down by qualified personnel.

The NRC staff reviewed the overall process used by the licensee to develop the St. Lucie-1 Master Component List, and the SWEL, composed of both SWEL 1 (sample list of designated safety functions equipment) and SWEL 2 (sample list of spent fuel pool related equipment) items, as described in Appendix B of the walkdown report. The licensee provided one combined SWEL consisting of both SWEL 1 and SWEL 2 items. The overall equipment selection process followed the screening process shown in Figures 1-1 and 1-2 of the walkdown guidance. Based on Appendix B of the walkdown report, the St. Lucie-1 SWEL meets the inclusion requirements of the walkdown guidance. Specifically, the following attributes were considered in the sample selection:

- A variety of systems, equipment and environments
- IPEEE equipment
- Major new or replacement equipment
- Risk considerations

Due to individual plant configurations and the walkdown guidance screening process followed to select the final SWEL equipment, it is possible that some classes of equipment will not be represented on the SWEL. The walkdown guidance recognizes this is due to the equipment not being present in the plant (e.g., some plants generate DC power using inverters and therefore do not have motor generators) or the equipment being screened out during the screening process (the screening process is described in Section 3 of the walkdown guidance). Based on the information provided, the NRC staff noted that a detailed explanation was provided justifying cases where specific classes of equipment were not included as part of the SWEL, and concludes that these exclusions are acceptable.

The NRC staff also noted that Appendix B of the walkdown report describes the process for determining which SSCs could or could not cause rapid drain-down of the spent fuel pool. After reviewing the information provided in Appendix B of the walkdown report, the staff concludes that the licensee provided sufficient information on the approach to identify the rapid drain-down items that should be included as part of the SWEL for St. Lucie-1.

After reviewing the SWEL, the NRC staff concludes that the sample of SSCs represents a diversity of component types and assures inclusion of components from critical systems and functions, thereby meeting the intent of the walkdown guidance. In addition, the NRC staff notes that the equipment selection personnel were appropriately supported by plant operations staff as described in the walkdown guidance.

3.2.3 Implementation of the Walkdown Process

Section 4, Seismic Walkdowns and Area Walk-Bys, of the walkdown guidance provides information to licensees regarding the conduct of the seismic walkdowns and area walk-bys for each site.

The NRC staff reviewed Section 5 of the walkdown report, which summarizes the results of the seismic walkdowns and area walk-bys, including an overview of the number of items walked down and the number of areas walked-by. The walkdown report states that teams that consisted of at least two qualified SWEs conducted the seismic walkdowns and area walk-bys. According to the signed seismic walkdown checklists (SWCs) and area walk-by checklists (AWCs), these activities were conducted between October 1 and 5, 2012. Appendices C and D of the walkdown report provide the completed SWCs and AWCs, documenting the results for each item of equipment on the SWEL and each area containing SWEL equipment. The licensee used the checklists provided in Appendix C of the walkdown guidance report without modification.

The licensee documented cases of potentially adverse seismic conditions (PASCs) in the checklists for further evaluation. Tables 5-2 and 5-3 of the walkdown report list the PASCs identified during the seismic walkdowns and the area walk-bys. The tables describe how each condition was addressed (e.g., placement in the CAP), its resolution and its current status. Based on the initial review of the checklists, the staff was unable to confirm that all the PASCs identified during the walkdowns were included in this table. By letter dated November 1, 2013, the staff issued two questions in a request for additional information (RAI) in order to obtain additional clarification regarding the process followed by the licensee when evaluating conditions identified in the field during the walkdowns and walk-bys. Specifically, in Question 1 the staff requested the licensee to explain how a field observation was determined to be PASC, and to ensure that the basis for determination was addressed using normal plant processes and documented in the walkdown report. In response to Queston 1, the licensee stated that if an observation could not be resolved by an engineering evaluation based on the walkdown guidance training, an existing drawing, or a calculation that provided the basis for a satisfactory determination, it was entered into the CAP. The licensee referred to Tables 5-2 and 5-3 for the issues identified during the walkdowns and walk-bys and Table 6-1, which provided the results of the licensing basis evaluation performed. The licensee assessed all of the identified concerns and concluded that there are no licensing basis or operability issues and no new issues were identified.

After evaluating the licensee's response and reviewing Tables 5-2, 5-3, and 6-1, the staff concludes that the licensee responded appropriately to Question 1, PASCs were properly identified and documented, and summary Tables 5-2, 5-3, and 6-1 are considered complete.

In addition to the information provided above, the NRC staff notes that anchorage configurations were verified to be consistent with existing plant documentation for at least 50 percent of the SWEL items, in accordance with Section 4 of the walkdown guidance.

The equipment and areas that were inaccessible during the 180-day period are listed in Attachment E, Tables E-1 and E-2 of the walkdown report. The lists of inaccessible items also include the condition that caused the delay of the walkdown. A limited number of SWEL components (total of eleven) were inaccessible at the time of the initial walkdowns. The reasons for the inaccessibility were among those allowed by the walkdown guidance.

In addition, the licensee stated that six of the eleven items are electrical cabinets whose internally mounted items were inaccessible due to the energized nature of the cabinets. Although these cabinets were not opened during the initial walkdowns for internal inspections, the cabinets will be opened during a later walkdown to ensure that visibly accessible internal component mountings are adequate. The licensee deferred the walkdowns of these cabinets to the next equipment outage and issued a plant corrective action to plan for and implement the additional cabinet internal inspections.

The licensee stated that the remaining five SWEL items will be walked down during the next refueling outage in fall 2013. A corrective action was issued to identify and track the internal inspections of the six electrical cabinets. The licensee stated that a supplemental submittal with the results of these inaccessible items will be provided in June 2014, in conjunction with the completion of the St. Lucie Unit 2 delayed walkdown items.

Based on the information provided in the licensee's submittals, the NRC staff concludes that the licensee's implementation of the walkdown process meets the intent of the walkdown guidance.

3.2.4 Licensing Basis Evaluations and Results

Section 5, Seismic Licensing Basis Evaluations, of the walkdown guidance provides information to licensees regarding the conduct of licensing basis evaluations for items identified during the seismic walkdowns as degraded, nonconforming, or unanalyzed that might have potential seismic significance.

The NRC staff reviewed Section 6 of the St. Lucie-1 Walkdown Report, which discusses the process for conducting the seismic licensing basis evaluations of the PASCs identified during the seismic walkdowns and area walk-bys. The licensee stated that it performed one licensing basis evaluation that is summarized in Table 6-1 of the walkdown report.

The staff reviewed Table 6-1 and the description of the actions taken or planned to address the deficiency. The staff concludes that the licensee appropriately identified potentially degraded, nonconforming, or unanalyzed conditions, which meets the intent of the walkdown guidance.

3.2.5 Conclusion

Based on the discussion above, the NRC staff concludes that the licensee's implementation of seismic walkdown methodology meets the intent of the walkdown guidance for personnel qualifications, development of SWEL, implementation of the walkdown process, and seismic licensing basis evaluations.

3.3 Peer Review

Section 6, Peer Review, of the walkdown guidance provides licensees with information regarding the conduct of peer reviews for the activities performed during the seismic walkdowns. Page 6-1 of the walkdown guidance identifies the following activities to be conducted during the peer review process:

- Review the selection of the SSCs included on the SWELs
- Review a sample of the checklists prepared for the seismic walkdowns and area walk-bys
- Review the licensing basis evaluations
- Review the decisions for entering the potentially adverse conditions into the CAP
- Review the walkdown report
- Summarize the results of the peer review process in the walkdown report

The NRC staff reviewed the information provided in Appendix F of the St. Lucie-1 Walkdown Report which describes the conduct of the peer review. In addition, the staff reviewed the response to RAI Question 2. In Question 2, the staff requested the licensee to provide additional information on the overall peer review process that was followed as part of the walkdown activities. Specifically, the staff requested the licensee to confirm that the activities identified in page 6-1 of the walkdown guidance were assessed and documented in the report. The licensee was also requested to confirm that any individual involved in performing any given walkdown activity was not a peer reviewer for that same activity. In response to Question 2, the licensee confirmed that all the activities identified on page 6-1 of the walkdown guidance were included as part of the peer review process and referred to the summary of the peer review activities provided in Appendix F of the walkdown report. The staff noted that although in some cases one of the peer reviewers was involved in reviewing sections of the walkdown report in which they participated; however, the involvement of other peer reviewer, who was not involved in the reviewed work, ensured the independence of the peer review.

The staff reviewed the licensee's summary of each of these activities, which included the peer review team members' level of involvement, the peer review findings, and resolution of peer review comments. After reviewing the licensee's submittals, the NRC staff concludes that the licensee sufficiently documented the results of the peer review activities and how these reviews affected the work described in the walkdown report.

Based on the discussion above, the NRC staff concludes that the licensee's results of the peer review and subsequent actions taken in response to the peer review meets the intent of Section 6 of the walkdown guidance.

3.4 IPEEE Information

Section 7, IPEEE Vulnerabilities, of the walkdown guidance provides information to licensees regarding the reporting of the evaluations conducted and actions taken in response to seismic vulnerabilities identified during the IPEEE program. Through the IPEEE program and Generic Letter 88-20, "Individual Plant Examination of External Events for Severe Accident Vulnerabilities," licensees previously performed a systematic examination to identify any plant-specific vulnerabilities to severe accidents.

The licensee reviewed the IPEEE report and noted that no vulnerabilities were identified and no scenario or event sequence was considered to be a severe accident vulnerability.

Based on the NRC staff's review of Section 7 of the walkdown report, the staff concludes that the licensee's discussion of the IPEEE program, as well as actions taken to eliminate or reduce them, meets the intent of Section 7 of the walkdown guidance.

3.5 Planned Upgrades

The licensee did not identify any planned or newly installed protection and mitigation features in the walkdown report.

3.6 NRC Oversight

3.6.1 Independent Verification by Resident Inspectors

On July 6, 2012,[9] the NRC issued Temporary Instruction (TI) 2515/188 "Inspection of Near-Term Task Force Recommendation 2.3 Seismic Walkdowns." In accordance with the TI, NRC inspectors independently verified that the St. Lucie-1 licensee implemented the seismic walkdowns in accordance with the walkdown guidance. Additionally, the inspectors independently performed walkdowns of a sample of seismic protection features. The inspection report dated January 30, 2013,[10] documents the results of this inspection and states that no findings were identified.

4.0 INACCESSIBLE ITEMS

The equipment and areas that were inaccessible during the 180-day period are discussed and listed in Tables E-1 and E-2 of Appendix E of the walkdown report. As discussed above, a limited number of SWEL components (total of five) were inaccessible at the time of the initial walkdowns. The walkdowns for these inaccessible SWEL items were performed by the end of the next scheduled refueling outage in fall 2013. In addition, six cabinets with inaccessible internals were identified. A corrective action was issued to plan and implement the internal inspection of the energized cabinets. The licensee stated that it will provide a supplemental submittal with the results of these walkdown items in June 2014, in conjunction with the completion of the St. Lucie, Unit 2 delayed walkdown items.

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[9]ADAMS Accession No. ML12156A052
[10]ADAMS Accession No. ML13031A341

The staff concludes that the inaccessible equipment list was developed consistent with the walkdown guidance. The schedule for completion of the walkdowns of the inaccessible SWEL items is consistent with the time of the next scheduled outage.

5.0 CONCLUSION

The NRC staff concludes that the licensee's implementation of seismic walkdown methodology meets the intent of the walkdown guidance. The staff concludes that the licensee verified, through the implementation of the walkdown guidance activities and, in accordance with plant processes and procedures, the plant configuration with the current seismic licensing basis; addressed degraded, nonconforming, or unanalyzed seismic conditions; and verified the adequacy of monitoring and maintenance programs for protective features. Furthermore, the NRC staff notes that no immediate safety concerns were identified. The staff acknowledges that the licensee provided an acceptable schedule to complete seismic walkdown activities of the delayed walkdown items during the fall 2013 refueling outage and submit the results in June 2014. The NRC staff reviewed the information provided and determined that sufficient information was provided to be responsive to Enclosure 3 of the 50.54(f) letter.

STAFF ASSESSMENT OF SEISMIC WALKDOWN REPORT

NEAR-TERM TASK FORCE RECOMMENDATION 2.3 RELATED TO

THE FUKUSHIMA DAI-ICHI NUCLEAR POWER PLANT ACCIDENT

FLORIDA POWER AND LIGHT COMPANY

ST LUCIE NUCLEAR PLANT, UNIT 2

DOCKET NO. 50-389

1.0 INTRODUCTION

On March 12, 2012,[1] the U.S. Nuclear Regulatory Commission (NRC) issued a request for information per Title 10 of the *Code of Federal Regulations*, Subpart 50.54(f) (the 50.54(f) letter) to all power reactor licensees and holders of construction permits in active or deferred status. The request was part of the implementation of lessons learned from the accident at the Fukushima Dai-ichi nuclear power plant. Enclosure 3, "Recommendation 2.3: Seismic,"[2] to the 50.54(f) letter requested licensees to conduct seismic walkdowns to identify and address degraded, nonconforming, or unanalyzed conditions using the corrective action program (CAP), verify the adequacy of monitoring and maintenance procedures, and report the results to the NRC.

The 50.54(f) letter requested licensees to provide the following:

a. Information concerning the plant-specific hazard licensing bases and a description of the protection and mitigation features considered in the licensing basis evaluation.

b. Information related to the implementation of the walkdown process.

c. A list of plant-specific vulnerabilities identified by the Individual Plant Examination of External Events (IPEEE) program and a description of the actions taken to eliminate or reduce them.

d. Results of the walkdown including key findings and identified degraded, nonconforming, or unanalyzed conditions.

e. Any planned or newly installed protection and mitigation features.

f. Results and any subsequent actions taken in response to the peer review.

In accordance with the 50.54(f) letter, Enclosure 3, Required Response Item 2, licensees were required to submit a response within 180 days of the NRC's endorsement of the seismic

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walkdown process. By letter dated May 29, 2012,[3] the Nuclear Energy Institute staff submitted Electric Power Research Institute document 1025286, "Seismic Walkdown Guidance for Resolution of Fukushima Near-Term Task Force Recommendation 2.3: Seismic," (walkdown guidance) to the NRC staff to consider for endorsement. By letter dated May 31, 2012,[4] the NRC staff endorsed the walkdown guidance.

By letter dated November 27, 2012,[5] Florida Power and Light Company (the licensee) provided a response to Enclosure 3 of the 50.54(f) letter Required Response Item 2, for St. Lucie Nuclear Plant Unit 2 (St. Lucie-2). The NRC staff reviewed the walkdown report and determined that additional supplemental information would assist the staff in completing its review. In a letter dated November 1, 2013,[6] the NRC staff requested additional information to gain a better understanding of the processes and procedures used by the licensee in conducting the walkdowns and walk-bys. The licensee responded to the NRC staff request by letter dated December 3, 2013.[7]

The NRC staff evaluated the licensee's submittals to determine if the information provided in the walkdown report met the intent of the walkdown guidance and if the licensee responded appropriately to Enclosure 3 of the 50.54(f) letter.

2.0 REGULATORY EVALUATION

The structures, systems, and components (SSCs) important to safety in operating nuclear power plants are designed either in accordance with, or meet the intent of Appendix A to 10 CFR Part 50, General Design Criterion (GDC) 2: "Design Bases for Protection Against Natural Phenomena"; and Appendix A to 10 CFR Part 100, "Reactor Site Criteria." GDC 2 states that SSCs important to safety at nuclear power plants shall be designed to withstand the effects of natural phenomena such as earthquakes, tornadoes, hurricanes, floods, tsunami, and seiches without loss of capability to perform their safety functions.

For initial licensing, each licensee was required to develop and maintain design bases that, as defined by 10 CFR 50.2, identify the specific functions that an SSC of a facility must perform, and the specific values or ranges of values chosen for controlling parameters as reference bounds for the design.

The design bases for the SSCs reflect appropriate consideration of the most severe natural phenomena that have been historically reported for the site and surrounding area. The design bases also reflect sufficient margin to account for the limited accuracy, quantity, and period of time in which the historical data have been accumulated.

The current licensing basis is the set of NRC requirements applicable to a specific plant, including the licensee's docketed commitments for ensuring compliance with, and operation within, applicable NRC requirements and the plant-specific design basis, including all modifications and additions to such commitments over the life of the facility operating license.

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[3]ADAMS Package Accession No. ML121640872
[4]ADAMS Accession No. ML12145A529
[5]ADAMS Accession No. ML123400400
[6]ADAMS Accession No. ML13304B418
[7]ADAMS Accession No. ML13346A157

3.0 TECHNICAL EVALUATION

3.1 Seismic Licensing Basis Information

The licensee provided information on the plant-specific licensing basis for the Seismic Category I SSCs for St. Lucie-2 in Section 2 of the walkdown report. Consistent with the walkdown guidance, the staff noted that the report includes a summary of the Operating Basis Earthquake (OBE) and Safe Shutdown Earthquake (SSE) as well as a description of the codes, standards, and methods that were used in the design of the Seismic Category I SSCs for meeting the plant-specific seismic licensing basis requirements. The NRC staff reviewed Section 2 of the walkdown report, focusing on the summary of the OBE, SSE and the design codes used in the design.

Based on the NRC staff's review, the staff concludes that the licensee has provided information on the plant-specific seismic licensing basis and a description of the protection and mitigation features considered in the licensing bases evaluation consistent with Section 8, Submittal Report, of the walkdown guidance.

3.2 Seismic Walkdown Methodology Implementation

Section 2, Personnel Qualifications; Section 3, Selection of SSCs; Section 4, Seismic Walkdowns and Area Walk-Bys; and Section 5, Seismic Licensing Basis Evaluations, of the walkdown guidance provide information to licensees regarding the implementation of an appropriate seismic walkdown methodology. By letter dated July 9, 2012,[8] the licensee confirmed that it would utilize the walkdown guidance in the performance of the seismic walkdowns at St. Lucie-2.

The walkdown report dated November 27, 2012, did not identify deviations from the walkdown guidance.

The NRC staff reviewed the following sections of the walkdown methodology implementation provided in the walkdown report:

- Personnel Qualifications
- Development of the Seismic Walkdown Equipment Lists (SWELs)
- Implementation of the Walkdown Process
- Licensing Basis Evaluations and Results

3.2.1 Personnel Qualifications

Section 2, Personnel Qualifications, of the walkdown guidance provides licensees with qualification information for personnel involved in the conduct of the seismic walkdowns and area walk-bys.

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[8] ADAMS Accession No.ML12192A519

The NRC staff reviewed the information provided in Section 3, Table 3-1, and Appendices A and F of the walkdown report, which includes the walkdown personnel and their qualifications. Specifically, the staff reviewed the summary of the background, experience, and level of involvement for the following personnel involved in the seismic walkdown activities: equipment selection personnel, seismic walkdown engineers (SWEs), licensing basis reviewers, IPEEE reviewers, peer review team, and operations staff.

Based on the review of the licensee's submittals, the NRC staff concludes that those involved in the seismic walkdown activities have the appropriate seismic background, knowledge and experience, as specified in Section 2 of the walkdown guidance.

3.2.2 Development of the SWEL

Section 3, Selection of SSCs, of the walkdown guidance provides information to licensees for selecting the SSCs that should be placed on the SWELs, so that they can be walked down by qualified personnel.

The NRC staff reviewed the overall process used by the licensee to develop the St. Lucie-2 Master Component List, and the SWEL, composed of both SWEL 1 (sample list of designated safety functions equipment) and SWEL 2 (sample list of spent fuel pool related equipment) items, as described in Appendix B of the walkdown report. The licensee provided one combined SWEL consisting of both SWEL 1 and SWEL 2 items. The overall equipment selection process followed the screening process shown in Figures 1-1 and 1-2 of the walkdown guidance. Based on Appendix B of the walkdown report, the St. Lucie-2 SWEL meets the inclusion requirements of the walkdown guidance. Specifically, the following attributes were considered in the sample selection:

- A variety of systems, equipment and environments
- IPEEE equipment
- Major new or replacement equipment
- Risk considerations

Due to individual plant configurations and the walkdown guidance screening process followed to select the final SWEL equipment, it is possible that some classes of equipment will not be represented on the SWEL. The walkdown guidance recognizes this is due to the equipment not being present in the plant (e.g., some plants generate DC power using inverters and therefore do not have motor generators) or the equipment being screened out during the screening process (the screening process is described in Section 3 of the walkdown guidance). Based on the information provided, the NRC staff noted that a detailed explanation was provided justifying cases where specific classes of equipment were not included as part of the SWEL, and concludes that these exclusions are acceptable.

The NRC staff also noted that Appendix B of the walkdown report describes the process for determining which SSCs could or could not cause rapid drain-down of the spent fuel pool. After reviewing the information provided in Appendix B of the walkdown report, the staff concludes that the licensee provided sufficient information on the approach to identify the rapid drain-down items that should be included as part of the SWEL for St. Lucie-2.

After reviewing the SWEL, the NRC staff concludes that the sample of SSCs represents a diversity of component types and assures inclusion of components from critical systems and functions, thereby meeting the intent of the walkdown guidance. In addition, the NRC staff notes that the equipment selection personnel were appropriately supported by plant operations staff as described in the walkdown guidance.

3.2.3 Implementation of the Walkdown Process

Section 4, Seismic Walkdowns and Area Walk-Bys, of the walkdown guidance provides information to licensees regarding the conduct of the seismic walkdowns and area walk-bys for each site.

The NRC staff reviewed Section 5 of the walkdown report, which summarizes the results of the seismic walkdowns and area walk-bys, including an overview of the number of items walked down and the number of areas walked-by. The walkdown report states that teams that consisted of at least two qualified SWEs conducted the seismic walkdowns and area walk-bys. According to the signed seismic walkdown checklists (SWCs) and area walk-by checklists (AWCs), these activities were conducted between September 24 and 28, 2012. Appendices C and D of the walkdown report provide the completed SWCs and AWCs, documenting the results for each item of equipment on the SWEL and each area containing SWEL equipment. The licensee used the checklists provided in Appendix C of the walkdown guidance report without modification.

The licensee documented cases of potentially adverse seismic conditions (PASCs) in the checklists for further evaluation. Tables 5-2 and 5-3 of the walkdown report list the PASCs identified during the seismic walkdowns and the area walk-bys. The tables describe how each condition was addressed (e.g., placement in the CAP), its resolution and its current status. Based on the initial review of the checklists, the staff was unable to confirm that all the PASCs identified during the walkdowns were included in this table. By letter dated November 1, 2013, the staff issued two questions in a request for additional information (RAI) in order to obtain additional clarification regarding the process followed by the licensee when evaluating conditions identified in the field during the walkdowns and walk-bys. Specifically, in Question 1 the staff requested the licensee to provide further explanation regarding how a field observation was determined to be PASC, and to ensure that the basis for determination was addressed using normal plant processes and documented in the walkdown report. In response to Question 1, the licensee stated that if an observation could not be resolved by an engineering evaluation based on the walkdown guidance training, an existing drawing, or a calculation that provided the basis for a satisfactory determination, it was entered into the CAP. The licensee referred to Tables 5-2 and 5-3 for the issues identified during the walkdowns and walk-bys and Table 6-1, which provides the results of the licensing basis evaluations performed. The licensee assessed all of the identified concerns and concluded that there are no licensing basis or operability issues and no new issues were identified.

After evaluating the licensee's response and reviewing Tables 5-2, 5-3, and 6-1, the staff concludes that the licensee responded appropriately to RAI 1, PASCs were properly identified and documented and summary Tables 5-2, 5-3, and 6-1 are considered complete.

In addition to the information provided above, the NRC staff notes that anchorage configurations were verified to be consistent with existing plant documentation for at least 50 percent of the SWEL items, in accordance with Section 4 of the walkdown guidance.

The equipment and areas that were inaccessible during the 180-day period are listed in Attachment E, Table E-2 of the walkdown report. The lists of inaccessible items also include the condition that caused the delay of the walkdown. A limited number of SWEL components (total of four) were inaccessible at the time of the initial walkdowns. The reasons for the inaccessibility were among those allowed by the walkdown guidance. All four inaccessible items are electrical cabinets whose internally mounted items were inaccessible due to the energized nature of the cabinets. Although these cabinets were not opened during the initial walkdowns for internal inspections, the cabinets will be opened during a later walkdown to ensure that visibly accessible internal component mountings are adequate. The licensee deferred the walkdowns of these cabinets to the next equipment outage in spring 2014 and issued a plant corrective action to plan for and implement the additional cabinet internal inspections.

The licensee stated that a supplemental submittal with the results of these inaccessible items will be provided in June 2014, in conjunction with the completion of the St. Lucie Unit 1 delayed walkdown items.

Based on the information provided in the licensee's submittals, the NRC staff concludes that the licensee's implementation of the walkdown process meets the intent of the walkdown guidance.

3.2.4 Licensing Basis Evaluations and Results

Section 5, Seismic Licensing Basis Evaluations, of the walkdown guidance provides information to licensees regarding the conduct of licensing basis evaluations for items identified during the seismic walkdowns as degraded, nonconforming, or unanalyzed that might have potential seismic significance.

The NRC staff reviewed Section 6 of the St. Lucie-2 Walkdown Report, which discusses the process for conducting the seismic licensing basis evaluations of the PASCs identified during the seismic walkdowns and area walk-bys. The licensee stated that it performed four licensing basis evaluations that are summarized in Table 6-1 of the walkdown report and were documented within the corresponding condition reports. In response to RAI 1, the licensee noted that all four licensing basis evaluation condition reports are closed.

The staff reviewed Table 6-1 and the description of the actions taken or planned to address deficiencies. The staff concludes that the licensee appropriately identified potentially degraded, nonconforming, or unanalyzed conditions, which meets the intent of the walkdown guidance.

3.2.5 Conclusion

Based on the discussion above, the NRC staff concludes that the licensee's implementation of seismic walkdown methodology meets the intent of the walkdown guidance for personnel qualifications, development of SWEL, implementation of the walkdown process, and seismic licensing basis evaluations.

3.3 Peer Review

Section 6, Peer Review, of the walkdown guidance provides licensees with information regarding the conduct of peer reviews for the activities performed during the seismic walkdowns. Page 6-1 of the walkdown guidance identifies the following activities to be conducted during the peer review process:

- Review the selection of the SSCs included on the SWELs
- Review a sample of the checklists prepared for the seismic walkdowns and area walk-bys
- Review the licensing basis evaluations
- Review the decisions for entering the potentially adverse conditions into the CAP
- Review the walkdown report
- Summarize the results of the peer review process in the walkdown report

The NRC staff reviewed the information provided in Appendix F of the St. Lucie-2 Walkdown Report which describes the conduct of the peer review. In addition, the staff reviewed the response to Question 2. In Question 2, the staff requested the licensee to provide additional information on the overall peer review process that was followed as part of the walkdown activities. Specifically, the staff requested the licensee to confirm that the activities identified in page 6-1 of the walkdown guidance were assessed and documented in the report. The licensee was also requested to confirm that any individual involved in performing any given walkdown activity was not a peer reviewer for that same activity. In response to Question 2, the licensee confirmed that all the activities identified on page 6-1 of the walkdown guidance were included as part of the peer review process and referred to the summary of the peer review activities provided in Appendix F of the walkdown report. The staff noted that in some cases one of the peer reviewers reviewed sections of the walkdown report in which they participated; however, the involvement of the other peer reviewer, who was not involved in the reviewed work, ensured the independence of the peer review.

The staff reviewed the licensee's summary of each of these activities, which included the peer review team members' level of involvement, the peer review findings, and resolution of peer review comments. After reviewing the licensee's submittals, the NRC staff concludes that the licensee sufficiently documented the results of the peer review activities and how these reviews affected the work described in the walkdown report.

Based on the discussion above, the NRC staff concludes that the licensee's results of the peer review and subsequent actions taken in response to the peer review meets the intent of Section 6 of the walkdown guidance.

3.4 IPEEE Information

Section 7, IPEEE Vulnerabilities, of the walkdown guidance provides information to licensees regarding the reporting of the evaluations conducted and actions taken in response to seismic vulnerabilities identified during the IPEEE program. Through the IPEEE program and Generic Letter 88-20, "Individual Plant Examination of External Events for Severe Accident Vulnerabilities," licensees previously performed a systematic examination to identify any plant-specific vulnerabilities to severe accidents.

The licensee reviewed the IPEEE report and noted that no vulnerabilities were identified and no scenario or event sequence was considered to be a severe accident vulnerability.

Based on the NRC staff's review of Section 7 of the walkdown report, the staff concludes that the licensee's discussion of the IPEEE program, as well as actions taken to eliminate or reduce them, meets the intent of Section 7 of the walkdown guidance.

3.5 Planned Upgrades

The licensee did not identify any planned or newly installed protection and mitigation features in the walkdown report.

3.6 NRC Oversight

3.6.1 Independent Verification by Resident Inspectors

On July 6, 2012,[9] the NRC issued Temporary Instruction (TI) 2515/188 "Inspection of Near-Term Task Force Recommendation 2.3 Seismic Walkdowns." In accordance with the TI, NRC inspectors independently verified that the St. Lucie licensee implemented the seismic walkdowns in accordance with the walkdown guidance. Additionally, the inspectors independently performed walkdowns of a sample of seismic protection features. The inspection report dated January 30, 2013,[10] documents the results of this inspection and states that no findings were identified.

4.0 INACCESSIBLE ITEMS

The equipment and areas that were inaccessible during the 180-day period are discussed and listed in Table E-2 of Appendix E of the walkdown report. As discussed above, a limited number of SWEL components (total of four) were inaccessible at the time of the initial walkdowns. All four of these inaccessible items are energized cabinets requiring internal inspection. A corrective action was issued to plan and implement the internal inspection of the energized cabinets. The licensee stated that it will perform the walkdowns for these inaccessible SWEL items by the end of the next scheduled refueling outage in spring 2014. The licensee further stated that it will provide a supplemental submittal with the results of these walkdown items in June 2014, in conjunction with the completion of the St. Lucie Unit 1 delayed walkdown items.

[9]ADAMS Accession No. ML12156A052
[10]ADAMS Accession No. ML13031A341

The staff concludes that the inaccessible equipment list was developed consistent with the walkdown guidance. The schedule for completion of the walkdowns of the inaccessible SWEL items is consistent with the time of the next scheduled outage.

5.0 CONCLUSION

The NRC staff concludes that the licensee's implementation of seismic walkdown methodology meets the intent of the walkdown guidance. The staff concludes that the licensee verified, through the implementation of the walkdown guidance activities and, in accordance with plant processes and procedures, the plant configuration with the current seismic licensing basis; addressed degraded, nonconforming, or unanalyzed seismic conditions; and verified the adequacy of monitoring and maintenance programs for protective features. Furthermore, the NRC staff notes that no immediate safety concerns were identified. The staff acknowledges that the licensee provided an acceptable schedule to complete seismic walkdown activities of the delayed walkdown items during the spring 2014 refueling outage and submit the results in June 2014. The NRC staff reviewed the information provided and determined that sufficient information was provided to be responsive to Enclosure 3 of the 50.54(f) letter.

If you have any questions, please contact me at 301-415-1447 or by e-mail at Farideh.Saba@nrc.gov.

Sincerely,

/RA by AKlett for/

Farideh E. Saba, Senior Project Manager
Plant Licensing Branch II-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos. 50-335 and 50-389

Enclosures:
1. Staff Assessment of Seismic Walkdown Report for Unit 1
2. Staff Assessment of Seismic Walkdown Report for Unit 2

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