



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

June 2, 2014

Mary G. Korsnick
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SUBJECT: CALVERT CLIFFS NUCLEAR POWER PLANT, UNIT NOS. 1 AND 2,
R. E. GINNA NUCLEAR POWER PLANT, AND NINE MILE POINT NUCLEAR
STATION, UNIT NOS. 1 AND 2 - STAFF ASSESSMENT OF 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. MF0104, MF0105,
MF0127, MF0145, AND MF0146)

Dear Ms. Korsnick:

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) (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, Constellation Energy Nuclear Group (CENG) submitted its seismic walkdown reports for Calvert Cliffs Nuclear Power Plant (Calvert Cliffs) Units 1 and 2, R. E. Ginna Nuclear Power Plant (Ginna), and Nine Mile Point Nuclear Station (Nine Mile Point), Units 1 and 2.

CENG provided supplements to its submittals by letter dated December 2, 2013, for Calvert Cliffs, Units 1 and 2; by letters dated December 21, 2012, and July 25, 2013 for Ginna; and by letters dated November 27, 2012 and July 12, 2013 for Nine Mile Point Units 1 and 2.

The NRC staff acknowledges that for Calvert Cliffs, Unit 1 the walkdown of the inaccessible items will be performed by the next refueling outage in spring 2014, and an updated submittal report incorporating the deferred walkdown items will be provided by June 15, 2014, consistent with the regulatory commitments.

The NRC staff also acknowledges that the licensee for Nine Mile Point, Unit 2 will provide, within 60 days after the end of its refueling outage in summer 2014 (July 2014), its supplement addressing inaccessible items consistent with its commitment.

Based on the assessments provided in Enclosures 1 and 2 for Calvert Cliffs, Units 1 and 2 respectively, Enclosure 3 for Ginna, and Enclosures 4 and 5 for Nine Mile Point, Units 1 and 2, respectively; the NRC staff concludes as follows.

For Calvert Cliffs, Unit 1 the NRC staff concludes that the licensee's implementation of seismic walkdown methodology meets the intent of the walkdown guidance. The NRC staff concludes that, through the implementation of the walkdown guidance activities and, in accordance with plant processes and procedures; the licensee verified 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 NRC staff determined that sufficient information was provided to be responsive to Enclosure 3 of the 50.54(f) letter.

For Calvert Cliffs, Unit 2, the NRC staff concludes that the licensee's implementation of seismic walkdown methodology meets the intent of the walkdown guidance. The NRC staff concludes that, through the implementation of the walkdown guidance activities and, in accordance with plant processes and procedures, the licensee verified 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 NRC staff determined that sufficient information was provided to be responsive to Enclosure 3 of the 50.54(f) letter.

For Ginna, the NRC staff concludes that the licensee's implementation of seismic walkdown methodology meets the intent of the walkdown guidance. The NRC staff concludes that the licensee, through the implementation of the walkdown guidance activities and, in accordance with plant processes and procedures, verified 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 NRC staff acknowledges that a supplemental letter will be provided by July 31, 2014, addressing the remaining inaccessible items consistent with the regulatory commitment. The NRC staff determined that sufficient information was provided to be responsive to Enclosure 3 of the 50.54(f) letter, dated March 12, 2012.

For Nine Mile Point, Unit 1, the NRC staff concludes that the licensee's implementation of seismic walkdown methodology meets the intent of the walkdown guidance. The NRC staff concludes that the licensee, through the implementation of the walkdown guidance activities and, in accordance with plant processes and procedures, verified 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 NRC staff determined that sufficient information was provided to be responsive to Enclosure 3 of the 50.54(f) letter.

For the Nine Mile Point, Unit 2, the NRC staff concludes that the licensee's implementation of seismic walkdown methodology meets the intent of the walkdown guidance. The NRC staff concludes that the licensee, through the implementation of the walkdown guidance activities and, in accordance with plant processes and procedures, verified 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 NRC staff acknowledges that a supplemental letter will be provided by July 31, 2014 addressing the remaining inaccessible items consistent with the regulatory commitment. 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 there are any questions, please contact me at (301) 415-1476 or email at Mohan.Thadani@nrc.gov.

Sincerely,



Mohan C. Thadani, Senior Project Manager
Plant Licensing Branch I-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos.: 50-317, 50-318, 50-244,
50-220, and 50-410

Enclosures:

1. Staff Assessment for Calvert Cliffs Nuclear Power Plant, Unit 1
2. Staff Assessment for Calvert Cliffs Nuclear Power Plant, Unit 2
3. Staff Assessment for R.E. Ginna Nuclear Power Plant
4. Staff Assessment for Nine Mile Point Nuclear Station, Unit 1
5. Staff Assessment for Nine Mile Point Nuclear Station, Unit 2

cc w/enclosures: See next page.

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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
CONSTELLATION ENERGY NUCLEAR GROUP, LLC
CALVERT CLIFFS NUCLEAR GENERATING STATION, UNIT 1
DOCKET NO. 50-317

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) (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.

Enclosure 3 of the 50.54(f) letter requested licensees to provide the following:

- a. Information on 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 IPEEE [Individual Plant Examination of External Events] 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

¹Agencywide Documents Access and Management System (ADAMS) Accession No. ML12053A340.

²ADAMS Accession No. ML12056A049

walkdown process. By letter dated May 29, 2012,³ the Nuclear Energy Institute (NEI) staff submitted Electric Power Research Institute (EPRI) 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 Constellation Energy Nuclear Group (CENG, the licensee) provided a response to Enclosure 3 of the 50.54(f) letter Required Response Item 2, for the Calvert Cliffs Nuclear Power Plant – Unit 1 (CCNPP Unit 1). The NRC staff reviewed the walkdown report and determined that additional supplemental information would assist the NRC staff in completing its review. In a letter dated November 1, 2013⁶, 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 2, 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 Criteria [GDC] for Nuclear Power Plants," Criterion 2: "Design bases for protection against natural phenomena;" and Appendix A to 10 CFR Part 100, "Reactor Site Criteria." Criterion 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.

³ADAMS Package Accession No. ML121640872.

⁴ADAMS Accession No. ML12145A529

⁵ADAMS Package Accession No. ML123490409

⁶ADAMS Accession No. ML13304B418

⁷ADAMS Accession No. ML13346A011

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 CCNPP Unit 1 in Section 2 of Attachment 1 to the walkdown report. Consistent with the walkdown guidance, the NRC staff noted that the report includes a summary of the Safe Shutdown Earthquake (SSE) and 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 SSE and the design codes used in the design.

Based on the NRC staff's review, the NRC 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 (LBEs), of the walkdown guidance (EPRI document 1025286) provides 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 CCNPP Unit 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 (LBEs)

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.

The NRC staff reviewed the information provided in Section 3, Table 3-1, and Appendix A of Attachment 1 to the walkdown report, which includes information on the walkdown personnel and their qualifications. Specifically, the NRC staff reviewed the summary of the background, experience, and level of involvement for the following personnel involved in the seismic

⁸ADAMS Accession No. ML12194A030

walkdown activities: equipment selection personnel, seismic walkdown engineers (SWEs), licensing basis reviewers, IPEEE reviewers, peer review team, and plant operations staff.

Based on the review of the licensee's submittal, 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 SWELs

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 CCNPP Unit 1 Base lists, SWEL 1 (sample list of designated safety functions equipment), and SWEL 2 (sample list of spent fuel pool (SFP) related equipment). The overall equipment selection process followed the screening process shown in Figures 1-1 and 1-2 of the walkdown guidance. Based on Tables 4-1 and 4-2 of Attachment 1, and Tables B-2, B-3, and B-4 of Attachment 2 to the walkdown report, CCNPP Unit 1 SWEL 1 and 2 meet 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 direct current (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 noted that no rapid drain-down items were included as part of the SWEL 2, as described in Section 3 of the guidance. In Section 4.2.2 of Attachment 1 to the walkdown report, the licensee stated that no penetrations were identified that pose a potential for rapid drain down of the SFP. Therefore, the walkdown report presented no rapid drain-down list, as no equipment could potentially cause the SFP to drain rapidly. The basis for determining which SSCs could or could not cause rapid drain-down was described in the walkdown report in Appendix G of Attachment 5 to the walkdown report. After reviewing the information provided in related attachments, the NRC staff concludes that the licensee provided adequate justification for not including rapid drain-down items as part of the SWEL 2.

After reviewing SWELs 1 and 2, 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 Attachment 1 to 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 one Seismic Review team (SRT), which included at least two qualified Seismic Walkdown Engineers (SWEs), conducted the seismic walkdowns and area walk-bys. According to Section 5 of Attachment 1 to the walkdown report, the walkdowns were conducted during the weeks of August 6, 2012 and August 13, 2012. The walkdown report also states that during these evaluations, the SWEs actively discussed their observations and judgments with each other. Additionally, the SWEs agreed on the results of their Seismic Walkdowns and Area Walk-Bys before reporting the results of their review.

The walkdown report further states that the SWEs were assisted by other individuals while conducting the Seismic Walkdowns and Area Walk-Bys, specifically the Operations Staff or Design Engineer, and the checklists were filled out at the time of the walkdowns. The Seismic Walkdown Checklists (SWCs) and Area Walk-By Checklists (AWCs) were signed by two SWEs on November 9, 2012. The checklists provided in Appendix C of the walkdown guidance report were used without significant modification. A minor adjustment to the header allowed the walkdown team to use site-specific component location and identification coding.

The licensee indicated that no potentially adverse seismic conditions (PASCs) were identified during the seismic walkdowns and the area walk-bys. Tables 5-1 and 5-2 of Attachment 1 to the walkdown report present a summary of all of the issues identified during the seismic walkdowns and the area walk-bys. Tables 5-1 and 5-2 and checklist comments describe how the condition was addressed (e.g., placement in the CAP), its resolution and current status.

Based on the initial review of the checklists, the NRC staff was unable to confirm that all of the PASCs identified during the walkdowns were included in the walkdown report. By letter dated November 1, 2013, the NRC staff issued two questions in a request for additional information (RAI) in order to obtain clarification regarding the process followed by the licensee when evaluating conditions identified in the field during the walkdowns and walk-bys. Specifically, in RAI 1 the NRC 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 RAI 1, the licensee confirmed that the Seismic Walkdowns and Area Walk-Bys were performed in accordance with the walkdown guidance. The licensee stated that the SWEs, comprising a seismic review team, were paired with an Operations Senior Reactor Operator for

each day's walkdown, and a station engineer as needed to offer assistance where necessary. The judgments and conclusions of the SWEs are reflected in the completed SWCs and AWCs submitted. The licensee further stated that the final submitted checklists contain the SWE's observations as well as the basis for their disposition. The SWEs were provided information by station design engineering as needed to determine if an issue represented a PASC.

After evaluating the licensee's response and reviewing Tables 5-1 and 5-2 of the walkdown report, the NRC staff concludes that the licensee responded appropriately to RAI 1; PASCs were properly identified and the issues identified during walkdowns were properly documented; and summary Tables 5-1 and 5-2 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.

Section 5.4 of Attachment 1 to the walkdown report states that cabinets with external anchorages were not opened. Table 0-2 of Attachment 5 to the walkdown report includes the list of two components that require supplemental internal inspections because they were not opened during the walkdowns. The licensee confirmed that the SWCs for the components identified in Table 0-2 that are to be opened for internal inspections will be revised at the time of the supplemental walkdown to indicate the results of these internal inspections and will be submitted with the updated report on June 15, 2014, 90 days after all deferred walkdowns are complete.

The equipment and areas that were inaccessible during the 180-day period are discussed in Section 5 and listed in Tables 0-1 and 0-3 of Appendix E of Attachment 5 to the walkdown report. The list of inaccessible items also includes the condition which caused the delay of the walkdown. A limited number of SWEL components (total of twenty-four) were inaccessible at the time of the initial walkdowns. The walkdowns for all of the remaining inaccessible items were committed to be performed by the end of the CCNPP Unit 1 Refueling Outage 21 in spring 2014. The licensee committed to provide an updated submittal with the results of these walkdowns on June 15, 2014.

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 (LBEs) 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 Attachment 1 of the walkdown report, which discusses the process for conducting the seismic LBEs of the PASCs identified during the seismic walkdowns and area walk-bys. The licensee stated that the issues identified during the Seismic Walkdowns and Area Walk-Bys were not determined to be PASCs because in all cases the anomaly or issue would not prevent the equipment from performing its safety-related function. Therefore, separate LBEs were not necessary and none were performed. The licensee indicated that all of

the issues identified in the walkdowns were conservatively entered into the CAP. Use of the plant CAP to address adverse seismic conditions was also described in the Sections 5.2 and 5.3 of Attachment 1 to the walkdown report.

The NRC staff reviewed the CAP entries and the description of the actions taken or planned to address potential deficiencies. The NRC staff concludes that the licensee appropriately identified degraded, nonconforming, or unanalyzed conditions and entered them into the CAP, 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 SWELs, 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 Section 8 of Attachment 1, and Appendix F of Attachment 5 to the walkdown report which describes the conduct of the peer review. In addition, the NRC staff reviewed the response to RAI 2. In RAI 2, the NRC 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 NRC staff requested the licensee to confirm that the activities identified on 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 RAI 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 Section 8 of Attachment 1 and Appendix F of Attachment 5 to the walkdown report. In addition, the licensee confirmed that the peer reviewers were independent of the individual tasks being reviewed.

The NRC staff reviewed the licensee's description of each of these activities in the walkdown report and RAI response, which included a discussion of the peer review team members'

qualifications and 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 (GL) 88-20, "Individual Plant Examination of External Events for Severe Accident Vulnerabilities," licensees previously had performed a systematic examination to identify any plant-specific vulnerabilities to severe accidents.

The licensee discussed IPEEE evaluation of CCNPP Unit 1 in Section 7 of the walkdown report and provided background information regarding their IPEEE program. The licensee stated that the IPEEE program did not identify any major plant vulnerabilities or recommend any physical plant improvements for the seismic event. The walkdown report does not provide action completion dates or configuration management details, as there were no actions taken.

Based on the NRC staff's review of Section 7 of the walkdown report, the NRC staff concludes that the licensee's IPEEE program 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 CCNPP Unit 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 February 7, 2013,¹⁰ documents the results of this inspection and states that no findings were identified.

⁹ADAMS Accession No. ML12156A052

¹⁰ADAMS Accession No. ML13038A323

4.0 INACCESSIBLE ITEMS

The equipment and areas that were inaccessible during the 180-day period are discussed in Section 5 and listed in Tables 0-1 and 0-3 of Appendix E of Attachment 5 to the walkdown report. As discussed above, a limited number of SWEL components were inaccessible at the time of the initial walkdowns. The walkdowns for all of the remaining inaccessible items were committed to be performed by the end of the CCNPP Unit 1 Refueling Outage 21 in spring 2014. The licensee committed to provide an updated submittal with the results of these walkdowns by June 15, 2014.

The NRC staff concludes that the inaccessible equipment list was developed consistent with the walkdown guidance. The schedule for completion is consistent with the time to 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 NRC staff concludes that, through the implementation of the walkdown guidance activities and, in accordance with plant processes and procedures, the licensee verified 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 NRC staff acknowledges that a supplemental letter will be provided by June 15, 2014, addressing the results of the deferred walkdowns for the remaining inaccessible items, consistent with the regulatory commitments. 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
CONSTELLATION ENERGY NUCLEAR GROUP, LLC
CALVERT CLIFFS NUCLEAR POWER PLANT, UNIT 2
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1.0 INTRODUCTION

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

¹¹ADAMS Accession No. ML12053A340.

¹²ADAMS Accession No. ML12056A049

walkdown process. By letter dated May 29, 2012,¹³ the Nuclear Energy Institute (NEI) staff submitted Electric Power Research Institute (EPRI) 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, 2012,¹⁴ the NRC staff endorsed the walkdown guidance.

By letter dated November 27, 2012,¹⁵ Constellation Energy Nuclear Group (CENG, or the licensee) provided a response to Enclosure 3 of the 50.54(f) letter Required Response Item 2, for the Calvert Cliffs Nuclear Power Plant – Unit 2 (CCNPP Unit 2). By letter dated June 28, 2013,¹⁶ the licensee submitted a supplemental walkdown report to include the results of items that were inaccessible during the first inspection. The NRC staff reviewed the walkdown report and determined that additional supplemental information would assist the NRC staff in completing its review. In a letter dated November 1, 2013¹⁷, 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 2, 2013.¹⁸

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 Criteria [GDC] for Nuclear Power Plants," Criterion 2: "Design bases for protection against natural phenomena;" and Appendix A to 10 CFR Part 100, "Reactor Site Criteria." Criterion 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.

¹³ADAMS Package Accession No. ML121640872.

¹⁴ADAMS Accession No. ML12145A529

¹⁵ADAMS Package Accession No. ML123390475

¹⁶ADAMS Accession No. ML13193A150

¹⁷ADAMS Accession No. ML13304B418

¹⁸ADAMS Accession No. ML13346A011

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.

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 CCNPP Unit 1 in Section 2 of Attachment 1 to the walkdown report. Consistent with the walkdown guidance, the NRC staff noted that the report includes a summary of the Safe Shutdown Earthquake (SSE) and 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 SSE and the design codes used in the design.

Based on the NRC staff's review, the NRC 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 (LBEs), of the walkdown guidance (EPRl document 1025286) provides information to licensees regarding the implementation of an appropriate seismic walkdown methodology.

By letter dated July 9, 2012,¹⁹ the licensee confirmed that it would utilize the walkdown guidance in the performance of the seismic walkdowns at CCNPP Units 1 and 2. The walkdown report dated November 27, 2012 and updated on June 28, 2013 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 (LBEs) and Results

¹⁹ADAMS Accession No. ML12194A030

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.

The NRC staff reviewed the information provided in Section 3, Table 3-1, and Appendix A of Attachment 1 to the walkdown report, as well as Section 2, Table 2-1 and Appendix A of Attachment 1 to the supplemental walkdown report, which includes information on the walkdown personnel and their qualifications. Specifically, the NRC 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 plant 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 SWELs

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 CCNPP Units 1 and 2 Base lists, SWEL 1 (sample list of designated safety functions equipment), and SWEL 2 (sample list of spent fuel pool (SFP) related equipment). The overall equipment selection process followed the screening process shown in Figures 1-1 and 1-2 of the walkdown guidance. Based on Tables 4-1 and 4-2 of Attachment 1, and Table B-2 of Attachment 2 to the walkdown report, CCNPP Units 1 and 2 SWEL 1 and 2 (SWEL 2 is included in the CCNPP Unit 1 walkdown report since the fuel pool is common to both CCNPP Unit 1 and unit 2) meet 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 direct current (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 noted that no rapid drain-down items were included as part of the SWEL 2, as described in Section 3 of the guidance. The NRC staff also noted since the SFP is common between both Unit 1 and Unit 2 at CCNPP, the SWEL 2 development is documented in the CCNPP Unit 1 walkdown report. In Section 4.2.2 of Attachment 1 to the CCNPP Unit 1 walkdown report, the licensee stated that no penetrations were identified that pose a potential for rapid drain-down of the SFP. Therefore, the walkdown report presented no rapid drain-down list, as no equipment could potentially cause the SFP to drain rapidly. The basis for determining which SSCs could or could not cause rapid drain-down was described in the CCNPP Unit 1 walkdown report in Appendix G of Attachment 5. After reviewing the information provided in related attachments, the NRC staff concludes that the licensee provided adequate justification for not including rapid drain-down items as part of the SWEL 2.

In the supplemental walkdown report, the licensee states that one component substitution was necessary during the internal inspections of the deferred electrical cabinets because of industrial safety concerns as the selected cabinet contained high voltage components. The NRC staff reviewed the justifications for the substitution and concludes that the SWEL diversity has been maintained and the overall SWEL with the substitutions continues to have representation from every equipment class as the original SWEL.

After reviewing SWELs 1 and 2, 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 Attachment 1 to 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 one Seismic Review Team (SRT), which included at least two qualified Seismic Walkdown Engineers (SWEs), conducted the seismic walkdowns and area walk-bys. According to Section 5 of Attachment 1 to the walkdown report, the walkdowns were conducted during the weeks of August 6, 2012 and August 13, 2012. The supplemental seismic walkdowns were performed during the spring of 2013 based on Section 4 of Attachment 1 to the supplemental walkdown report. The walkdown report also states that during these evaluations, the SWEs actively discussed their observations and judgments with each other. Additionally, the SWEs agreed on the results of their seismic walkdowns and area walk-bys before reporting the results of their review.

The walkdown report further states that the SWEs were assisted by other individuals while conducting the seismic walkdowns and area walk-bys, specifically the Operations Staff or Design Engineer, and the checklists were filled out at the time of the walkdowns. The Seismic Walkdown Checklists (SWCs) and Area Walk-By Checklists (AWCs) were signed by two SWEs on November 9, 2012 for initial walkdowns, and on April 30, 2003 for supplemental walkdowns. The checklists provided in Appendix C of the walkdown guidance report were used without significant modification. A minor adjustment to the header allowed the walkdown team to use site-specific component location and identification coding.

The licensee indicated that no potentially adverse seismic conditions (PASCs) were identified during the seismic walkdowns and area walk-bys. Tables 5-1 and 5-2 of Attachment 1 to the walkdown report and Table 4-1 of Attachment 1 to the supplemental walkdown report present a summary of all of the issues identified during the initial and supplemental seismic walkdowns and the area walk-bys. Tables 5-1 and 5-2 of Attachment 1 and checklist comments in Attachments 3 and 4 to the walkdown report, as well as Table 4-1 of Attachment 1 and checklist comments in Attachments 2 and 3 to the supplemental walkdown report describe how the condition was addressed (e.g., placement in the CAP), its resolution and current status. Tables 3-1 and 3-2 of Attachment 1 to the supplemental walkdown report update the status of CAP items that were identified in Tables 5-1 and 5-2 of Attachment 1 to the walkdown report.

Based on the initial review of the checklists, the NRC staff was unable to confirm that all of the PASCs identified during the walkdowns were included in the walkdown report. By letter dated November 1, 2013, the NRC staff issued two questions in a request for additional information (RAI) in order to obtain clarification regarding the process followed by the licensee when evaluating conditions identified in the field during the walkdowns and walk-bys. Specifically, in RAI 1 the NRC 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 RAI 1, the licensee confirmed that the Seismic Walkdowns and Area Walk-Bys were performed in accordance with the walkdown guidance. The licensee stated that the SWEs, comprising a seismic review team, were paired with an Operations Senior Reactor Operator for each day's walkdown, and a station engineer as needed to offer assistance where necessary. The judgments and conclusions of the SWEs are reflected in the completed SWCs and AWCs submitted. The licensee further stated that the final submitted checklists contain the SWE's observations as well as the basis for their disposition. The SWEs were provided information by station design engineering as needed to determine if an issue represented a PASC.

After evaluating the licensee's response and reviewing Tables 5-1 and 5-2 of the walkdown report and Tables 3-1, 3-2 and 4-1 of Attachment 1 to the supplemental walkdown report, the NRC staff concludes that the licensee responded appropriately to RAI 1; PASCs were properly identified and the issues identified during walkdowns were properly documented; and summary Tables 5-1 and 5-2 of the walkdown report, and Tables 3-1, 3-2 and 4-1 of Attachment 1 to the supplemental walkdown report 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.

Section 5.4 of Attachment 1 to the walkdown report states that cabinets with external anchorages were not opened. Table 0-2 of Attachment 5 to the walkdown report includes the list of eight components that require supplemental internal inspections because they were not opened during the initial walkdowns. The licensee indicated in the supplemental walkdown report that two components were inspected during the original walkdowns and should not have been included in Table 0-2 as needing an additional internal inspection. Section 4.4 of Attachment 1 to the supplemental walkdown report documents the results of internal inspections on six items. One substitution was made on the supplemental internal inspection list due to industrial safety concerns as the original selected cabinet contained high voltage components. The NRC staff reviewed the description of the substitutions in their supplemental report. The NRC staff concludes that the SWEL diversity has been maintained and the overall SWEL with the substitutions continues to maintain the diversity of the equipment classes as the original SWEL.

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 LBEs 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 Attachment 1 of the walkdown report, which discusses the process for conducting the seismic LBEs of the PASCs identified during the seismic walkdowns and area walk-bys. The licensee stated that the issues identified during the seismic walkdowns and area walk-bys were not determined to be PASCs because in all cases the anomaly or issue would not prevent the equipment from performing its safety-related function. Therefore, separate LBEs were not necessary and none were performed. The licensee indicated that CAP entry for all of the issues identified in the walkdowns was conservatively performed. Use of the plant CAP to address adverse seismic conditions was also described in the Sections 5.2 and 5.3 of Attachment 1 to the walkdown report.

The NRC staff also reviewed Sections 4 and 5 of Attachment 1 to the supplemental walkdown report Section 4 of Attachment 1 to the supplemental walkdown report. Table 4-1 of Attachment 1 to the supplemental walkdown report documented three additional CAP items, including two issues identified as PASCs which were not included in the initial walkdown report. These issues were entered into the CAP system and Operations initially declared the equipment inoperable. Both issues were corrected prior to the restart of the unit from the outage.

The NRC staff reviewed the CAP entries and the description of the actions taken or planned to address potential deficiencies. The NRC staff concludes that the licensee appropriately identified degraded, nonconforming, or unanalyzed conditions and entered them into the CAP, 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 SWELs, 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 Section 8 of Attachment 1 and Appendix B of Attachment 5 to the walkdown report, and Section 6 of Attachment 1 to the supplemental walkdown report which describes the conduct of the peer review. In addition, the NRC staff reviewed the response to RAI 2. In RAI 2, the NRC 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 NRC staff requested the licensee to confirm that the activities identified on 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 RAI 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 Section 8 of Attachment 1, Appendix B of Attachment 5 to the walkdown report, and Section 6 of Attachment 1 to the supplemental walkdown report. In addition, the licensee confirmed that the peer reviewers were independent of the individual tasks being reviewed.

The NRC staff reviewed the licensee's description of each of these activities in the walkdown report and RAI response, which included a discussion of the peer review team members' qualifications and 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 meet 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 (GL) 88-20, "Individual Plant Examination of External Events for Severe Accident Vulnerabilities," licensees previously had performed a systematic examination to identify any plant-specific vulnerabilities to severe accidents.

The licensee discussed the IPEEE evaluation of CCNPP Unit 2 in Section 7 of the walkdown report and provided background information regarding their IPEEE program. The licensee stated that the IPEEE program did not identify any major plant vulnerabilities or recommend any physical plant improvements for the seismic event. The walkdown report does not provide action completion dates or configuration management details, as there were no actions taken.

Based on the NRC staff's review of Section 7 of the walkdown report, the NRC staff concludes that the licensee's IPEEE program 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, 2012,²⁰ 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 CCNPP Unit 2 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 February 7, 2013,²¹ documents the results of this inspection and states that no findings were identified.

4.0 CONCLUSION

The NRC staff concludes that the licensee's implementation of seismic walkdown methodology meets the intent of the walkdown guidance. The NRC staff concludes that, through the implementation of the walkdown guidance activities and, in accordance with plant processes and procedures, the licensee verified 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 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, dated March 12, 2012.

²⁰ADAMS Accession No. ML12156A052

²¹ADAMS Accession No. ML13038A323

STAFF ASSESSMENT OF SEISMIC WALKDOWN REPORT
NEAR-TERM TASK FORCE RECOMMENDATION 2.3 RELATED TO
THE FUKUSHIMA DAI-ICHI NUCLEAR POWER PLANT ACCIDENT
CONSTELLATION ENERGY NUCLEAR GROUP, LLC
GINNA NUCLEAR POWER PLANT
DOCKET NO. 50-244

1.0 INTRODUCTION

On March 12, 2012,²² 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) (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,"²³ 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.

Enclosure 3 of the 50.54(f) letter requested licensees to provide the following:

- a. Information on 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 IPEEE [Individual Plant Examination of External Events] 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

²² Agencywide Documents Access and Management System (ADAMS) Accession No. ML12053A340

²³ ADAMS Accession No. ML12056A049

walkdown process. By letter dated May 29, 2012,²⁴ the Nuclear Energy Institute (NEI) staff submitted Electric Power Research Institute (EPRI) 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, 2012,²⁵ the NRC staff endorsed the walkdown guidance.

By letter dated November 27, 2012,²⁶ Constellation Energy Nuclear Group, LLC (CENG, or the licensee) provided a response to Enclosure 3 of the 50.54(f) letter Required Response Item 2, for the R. E. Ginna Nuclear Power Plant (Ginna). By letters dated December 21, 2012²⁷ and July 25, 2013,²⁸ the licensee provided updated submittals to the initial seismic walkdown report for Ginna. The purpose of the latter submittals was to update the initial walkdown report with information and results on the delayed walkdowns and walk-bys of inaccessible SSCs, which were not completed during the initial walkdowns. By letter dated July 25, 2013, the licensee updated its commitment for completing and reporting the delayed walkdowns of the remaining inaccessible items by July 2014.

The NRC staff reviewed the walkdown report and determined that additional supplemental information would assist the NRC staff in completing its review. In a letter dated November 1, 2013²⁹, 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's request by letter dated December 2, 2013.³⁰

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 Criteria [GDC] for Nuclear Power Plants," Criterion 2: "Design bases for protection against natural phenomena;" and Appendix A to 10 CFR Part 100, "Reactor Site Criteria." Criterion 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, tsunamis, 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.

²⁴ ADAMS Package Accession No. ML121640872.

²⁵ ADAMS Accession No. ML12145A529

²⁶ ADAMS Accession No. ML123470119

²⁷ ADAMS Accession No. ML12362A448

²⁸ ADAMS Accession No. ML13210A034

²⁹ ADAMS Accession No. ML13304B418

³⁰ ADAMS Accession No. ML13346A011

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.

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 Ginna in Section 2 of the walkdown report. Consistent with the walkdown guidance, the NRC staff noted that the report includes a summary of the Safe Shutdown Earthquake (SSE) and 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 SSE and the design codes used in the design.

Based on the NRC staff's review, the NRC 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 (EPRI document 1025286) provides information to licensees regarding the implementation of an appropriate seismic walkdown methodology.

By letter dated July 9, 2012,³¹ the licensee confirmed that it would utilize the walkdown guidance in the performance of the seismic walkdowns at Ginna. The walkdown report dated November 27, 2012 and supplements dated December 21, 2012 and July 25, 2013, 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

³¹ ADAMS Accession No. ML12347A104

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.

The NRC staff reviewed the information provided in Section 3, and Table 3-1 of the walkdown report, which includes information on the walkdown personnel and their qualifications. Information on the personnel involved in the supplemental walkdowns is provided in Section 2 of the December 2012 supplement and Section 1 of the July 2013 supplement. Specifically, the NRC 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 SWELs

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 Ginna Base list, SWEL 1 (sample list of designated safety functions equipment), and SWEL 2 (sample list of spent fuel pool (SFP) related equipment). The licensee provided the base list, SWEL 1 and SWEL 2 in Attachment 2, Appendix B of the walkdown report and discussed these lists in Section 4 of the walkdown report. The overall equipment selection process followed the screening process shown in Figures 1-1 and 1-2 of the walkdown guidance. The NRC staff also noted that a rapid drain-down list was provided as Table B-3 of the walkdown report. Based on Appendix B of the walkdown report, Ginna SWELs 1 and 2 meet 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 direct current (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).

In its December 2012 submittal, the licensee stated that due to continued inaccessibility of certain deferred items, alternate components for six SWEL items would be made in order to complete the deferred walkdowns by the end of 2014. The licensee stated that the substituted items represent equipment of the same class and credited for the same function. The NRC staff reviewed Section 3.2 and Table 3-1 of the December 2012 supplement and noted that the six alternate components were acceptable because they represent the same equipment class and function. In addition, the NRC staff concludes that the substitutions maintained the diversity of the equipment classes represented in the original SWEL.

Attachment 1 of the walkdown report discusses the screening criteria which identifies SFP items that could potentially cause a rapid drain-down of the pool, even if such items were not Seismic Category I, in accordance with the walkdown guidance. In Section 4, the walkdown report states that the SWEL2 screening process included items below 10 feet above the top of the fuel and above 10 feet above the top of the fuel.

The NRC staff notes that the licensee stated that 103 SSCs associated with rapid drain down were included in SWEL2. The NRC staff notes that the December 21, 2012 supplement stated that 14 items on SWEL 2 would not be walked down due to their location in a locked, high radiation area. The licensee stated that these 14 items were on SWEL 2 due to the potential to cause rapid drain-down of the SFP but noted that the determination was made without taking credit for operator manual actions. The licensee referred to Appendix E of the December 2012 supplement for the operational considerations that would mitigate the consequences from a failure of these components.

The NRC staff reviewed Appendix E and the operational considerations to mitigate failure of these components, which include passive components, alternate cooling flowpaths, direct and indirect level indicators in the SFP, bypass ability, isolation valves, availability of portable pumps, seismic event procedures and the design of the SFP limiting the maximum drain-down to no more than five feet four inches from the top of fuel, which is in accordance with their current licensing basis to preclude the possibility of draining the pool. After reviewing the information in the walkdown reports, the NRC staff concludes that the licensee provided sufficient information to describe and assess rapid drain-down items identified for the SFP.

After reviewing SWELs 1 and 2, the NRC staff concludes that the sample of SSCs, including substitutions, 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, Section 4 of the December 2012 supplement and Section 3 of the July 2013 supplement, 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 and supplements state that teams which consisted of at least two qualified Seismic Walkdown Engineers (SWEs) conducted the seismic walkdowns and area walk-bys. According to the signed seismic walkdown checklists (SWCs) and area walk-by checklists (AWCs), the initial walkdown activities were conducted during the week of July 30, 2012. Supplemental walkdowns were performed during the fall 2012 refueling outage, and in the first half of 2013.

The walkdown report and supplements also state that the SWEs discussed their observations and judgments with each other during the walkdowns. Additionally, the SWEs agreed on the results of their seismic walkdowns and area walk-bys before reporting the results of their review. Attachments 3 and 4 of the walkdown report, Attachments 2, 3 and 4 of the December 2012 supplement and Appendix A of the July 2013 supplement provide the completed SWCs and AWCs, documenting the results for each item of equipment on SWEL 1 and 2 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. Table 5-1 of the walkdown report list the PASCs identified during the seismic walkdowns and the area walk-bys. Tables 4-2, 4-3 and 4-4 of the December 2012 supplement provide the findings for the first supplemental walkdowns while Tables 3-1 and 3-2 of the July 2013 supplement provide the findings of the second supplemental walkdowns and a status update of the open CAP items from the earlier walkdowns, respectively. The tables describe how each condition was addressed (e.g., placement in the CAP), its resolution and its current status. Based on the review of the checklists, the NRC 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 NRC 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 RAI 1 the NRC 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 RAI 1, the licensee confirmed that observations that could not be readily judged to be acceptable with respect to its current licensing basis during the walkdown, and not found to be previously evaluated as acceptable conditions through follow-up review of plant documentation, were identified as PASCs and documented as condition reports in the Ginna CAP. The licensee referred to Tables 5-1 and 5-2 of the walkdown report which includes all the PASCs identified during the walkdowns and area walk-bys for Ginna. and Tables 4-2, 4-3, and 4-4 of the December 2012 supplement and Table 3-2 of the July 2012 supplement for condition report numbers, condition summaries and action completion status. Finally, the licensee completed a 100 percent audit of the original field copy walkdown sheets and the final submitted walkdown sheets, and no new conditions were identified requiring supplemental information or entry into the CAP.

After evaluating the licensee's response and reviewing the aforementioned tables, the NRC staff concludes that the licensee responded appropriately to RAI 1, PASCs were properly identified and documented, and the PASC summary tables 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.

Table D-1 of the December 2012 supplement to the walkdown report confirms that the majority of the deferred walkdowns of inaccessible cabinets identified in Table E-3 of the walkdown report were internally inspected in October 2012. Accordingly, Table E-1 of the December 2012 supplement confirms that only four internal inspections have not been completed. By letter dated July 25, 2013, the licensee provided the results of two of the remaining items which were walked down in March 2013 and revised the regulatory commitment to complete the internal inspections of the remaining two cabinets in spring 2014. The licensee will submit the internal cabinet inspection results by July 31, 2014. The NRC staff reviewed the seismic walkdown checklists provided in these supplemental reports and confirmed that cabinets were opened to determine if any adverse conditions existed of internal equipment.

Tables B-1 and C-1 of the December 2012 supplement confirm that all inaccessible SWEL 1 items, not including the deferred internal inspections of cabinets previously discussed, identified in the initial walkdown report were completed in October 2012. Table B-2 confirms that the SWEL 2 items identified in the initial walkdown report were completed in October 2012.

The licensee committed to complete the deferred walkdowns for the limited number of remaining inaccessible items (in this case, internal cabinet inspections only) in spring 2014 and submit the results to the NRC by July 31, 2014. The NRC staff concludes that the inaccessible equipment list was developed consistent with the walkdown guidance.

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 LBEs 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 Ginna Walkdown Report, Section 5 of the December 2012 supplement and Section 4 of the July 2013 supplement, which discuss 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 its LBEs and resolved PASCs using the CAP. Tables 5-1 and 5-2 of the walkdown report, Tables 4-2, 4-3, and 4-4 of the December 2012 supplement, and Tables 3-1 and 3-2 of the July 2013 supplement list the key licensee findings and provides a complete list of the potentially degraded, nonconforming, or unanalyzed conditions. The tables also describe the actions taken or planned to address these conditions, including the current status of each of the items the licensee entered into the CAP.

The NRC staff reviewed the CAP entries and the description of the actions taken or planned to address deficiencies. The NRC staff concludes that the licensee appropriately identified potentially degraded, nonconforming, or unanalyzed conditions and entered them into the CAP, 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 SWELs, 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 Section 8 of the Ginna Walkdown Report, Section 6 of the December 2012 supplement, and Section 5 of the July 2013 supplement which describe the conduct of the peer review for the initial and supplemental walkdowns. In addition, the NRC staff reviewed the response to RAI 2. In RAI 2, the NRC 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 NRC 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 RAI 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 the original and supplemental walkdown reports.

The NRC 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 and supplements.

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 meet 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 (GL) 88-20, "Individual Plant Examination of External Events for Severe Accident Vulnerabilities," licensees previously had performed a systematic examination to identify any plant-specific vulnerabilities to severe accidents.

The licensee identified a number of seismic vulnerabilities during the IPEEE, a list of which is available for inspection. Tables 7-1 and 7-2 list the IPEEE improvements or initiatives that have been completed to address these vulnerabilities at Ginna.

Based on the NRC staff's review of Section 7 of the walkdown report, the NRC staff concludes that the licensee's identification of plant-specific vulnerabilities (including anomalies, outliers and other findings) identified by 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, 2012,³² 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 Ginna 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 February 11, 2013,³³ documents the results of this inspection and states that two NRC-identified and two self-revealing findings were identified and entered into the licensee's CAP. Due to the very low safety significance, these findings are non-cited violations consistent with Section 2.3.2 of the NRC Enforcement Policy.

³² ADAMS Accession No. ML12156A052

³³ ADAMS Accession No. ML13042A298

4.0 INACCESSIBLE ITEMS

The status of the limited number of remaining inaccessible items (two cabinets) is provided in Attachment 2 of the July 25, 2013 letter. The inspections for the remaining two deferred cabinets were committed to be completed in spring 2014. The licensee committed to provide the final supplemental submittal with the results of these inspections by July 31, 2014.

5.0 CONCLUSION

The NRC staff concludes that the licensee's implementation of seismic walkdown methodology meets the intent of the walkdown guidance. The NRC staff concludes that the licensee, through the implementation of the walkdown guidance activities and, in accordance with plant processes and procedures, verified 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 NRC staff acknowledges that a supplemental letter will be provided by July 31, 2014 addressing the remaining inaccessible items consistent with the regulatory commitment. 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, dated March 12, 2012..

STAFF ASSESSMENT OF SEISMIC WALKDOWN REPORT
NEAR-TERM TASK FORCE RECOMMENDATION 2.3 RELATED TO
THE FUKUSHIMA DAI-ICHI NUCLEAR POWER PLANT ACCIDENT
CONSTELLATION ENERGY NUCLEAR GROUP, LLC
NINE MILE POINT NUCLEAR STATION, UNIT 1
DOCKET NO. 50-220

1.0 INTRODUCTION

On March 12, 2012,³⁴ 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) (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,"³⁵ 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.

Enclosure 3 of the 50.54(f) letter requested licensees to provide the following:

- a) Information on 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 IPEEE [Individual Plant Examination of External Events] 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

³⁴ Agencywide Documents Access and Management System (ADAMS) Accession No. ML12053A340

³⁵ ADAMS Accession No. ML12056A049

walkdown process. By letter dated May 29, 2012,³⁶ the Nuclear Energy Institute (NEI) staff submitted Electric Power Research Institute (EPRI) 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, 2012,³⁷ the NRC staff endorsed the walkdown guidance.

By letter dated November 27, 2012,³⁸ Constellation Energy Nuclear Group, LLC (CENG or the licensee) provided a response to Enclosure 3 of the 50.54(f) letter Required Response Item 2, for Nine Mile Point Nuclear Station, Unit 1 (NMP1). In addition to the aforementioned letter, the licensee, by letter dated July 12, 2013³⁹, provided a supplement to the NMP1 seismic walkdown report. The supplemental report provides the results for the supplemental seismic walkdowns of components which were inaccessible during the initial walkdowns. The NRC staff reviewed the initial walkdown report and determined that additional supplemental information would assist the NRC staff in completing its review. In a letter dated November 1, 2013⁴⁰, 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 2, 2013.⁴¹

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 Criteria [GDC] for Nuclear Power Plants," Criterion 2: "Design bases for protection against natural phenomena," and Appendix A to 10 CFR Part 100, "Reactor Site Criteria." Criterion 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.

³⁶ ADAMS Package Accession No. ML121640872

³⁷ ADAMS Accession No. ML12145A529

³⁸ ADAMS Accession No. ML12342A031

³⁹ ADAMS Accession No. ML13197A222

⁴⁰ ADAMS Accession No. ML13304B418

⁴¹ ADAMS Accession No. ML13346A011

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.

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 NMP1 in Section 2 of the walkdown report. Consistent with the walkdown guidance, the NRC staff noted that the report includes a summary of the Safe Shutdown Earthquake (SSE) and 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 SSE and the design codes used in the design.

Based on the NRC staff's review, the NRC 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 (LBEs), of the walkdown guidance (EPRI document 1025286) provides information to licensees regarding the implementation of an appropriate seismic walkdown methodology. By letter dated July 9, 2012,⁴² the licensee confirmed that it would utilize the walkdown guidance in the performance of the seismic walkdowns at NMP1.

The walkdown report dated November 27, 2012, and supplemented on July 12, 2013, 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 (LBEs)

⁴² ADAMS Accession No. ML12194A030

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.

The NRC staff reviewed the information provided in Section 3, and Table 3-1 and Section 2, Table 2-1 of the initial and supplemental walkdown report, which includes information on the walkdown personnel and their qualifications. Specifically, the NRC 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 plant 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 SWELs

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 NMP1 Base list, SWEL 1 (sample list of designated safety functions equipment), and SWEL 2 (sample list of spent fuel pool (SFP) related equipment). The overall equipment selection process followed the screening process shown in Figures 1-1 and 1-2 of the walkdown guidance. Based on Section 4.2 of the walkdown report, NMP1 SWELs 1 and 2 meet 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 direct current (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 all 22 classes of equipment were included in the SWEL 1, as tabulated in Table 4-1.

The licensee discussed the approach to identifying all items that could lead to rapid drain-down in Sections 4.2.2 and 4.2.3 of the walkdown report. The licensee reported that there are no rapid drain-down items for input into SWEL 2. The NRC staff reviewed Sections 4.2.2 and 4.2.3 as well as the Base List 2, and the final SWEL 2 and noted that the licensee conducted a review of the SFP components and flow paths, using the guidance screening method, to identify any SSC that could cause rapid drain-down. The licensee stated that a return line break is limited in draining the SFP as siphon breakers are installed on the return lines to prevent siphoning of water from the SFP. The licensee also considered other SFP drain-down flow paths, and concluded that there are no components that could, upon failure, result in rapid drain-down of the SFP water level. After reviewing the information provided in this section, the NRC staff concludes that the licensee provided adequate justification for not including rapid drain-down items as part of the SWEL 2.

In Section 3.2 of the supplemental walkdown report, dated July 12, 2013, the licensee indicated that one SWEL component was substituted for an alternate component within the same equipment class due to plant accessibility issues. Table 3 -1 of the supplemental report identifies and describes the equipment that was used as a substitute. The NRC staff reviewed the licensee's justification provided for the equipment substitution, the description and equipment location and agrees that the substituted items are comparable to the previous ones and were located in similar environmental conditions. The licensee documented the supplemental inspection in the SWCs in Section B of the supplemental walkdown report. The NRC staff concludes that the SWEL diversity has been maintained and the overall SWEL with the substitutions continues to maintain the diversity of the equipment classes as the original SWEL.

After reviewing SWELs 1 and 2, 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 Attachment 1, Section 4 and 5 of the initial and supplemental 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 consisting of two qualified SWEs conducted the seismic walkdowns and area walk-bys during the week of July 23, 2012 (except drywell equipment walkdowns on November 1, 2012). In addition, a subsequent set of walkdowns were performed in April and May 2013, to complete inspections on twelve cabinets or panels that were not internally inspected during the initial walkdowns. In a letter dated July 12, 2013, the licensee submitted a supplemental walkdown report describing the results of these subsequent seismic walkdowns. In the executive summary of the walkdown report, the licensee stated that no

degraded, nonconforming, or unanalyzed condition were identified as result of the supplemental walkdowns.

Attachments 3 and 4, (initial report) and Appendices B and C (updated report) of the walkdown reports provide the completed Seismic Walkdown Checklists (SWCs) and Area Walk-By Checklists (AWCs), respectively, documenting the results for each item of equipment on SWEL 1 and SWEL 2 and each area containing SWEL equipment. The licensee used the checklists provided in Appendix C of the walkdown guidance report without modification.

The NRC staff reviewed the initial walkdown SWCs and AWCs and noted that all were signed on August 24, 2012. The NRC staff reviewed the overall walkdown process described in the walkdown report and additional clarification provided as part of response to RAI 1 (see the RAI discussion below). The licensee response to RAI 1 provides additional details on the internal process followed by the SWEs, which included team discussions and further evaluations at the daily meeting immediately after the walkdown. Throughout the walkdowns, observations made by the SWEs were noted on the field copies of the walkdown checklist. For conditions that could not be readily dispositioned by the SWEs, a condition report (CR) was generated to be further evaluated under the plant's CAP. The licensee stated that the judgments and conclusions of the SWEs are reflected in the completed SWCs and AWCs submitted. The NRC staff concludes that the process followed to complete these checklists was acceptable since all the issues and their resolutions identified in the field were properly documented in the checklists.

In addition, while reviewing the summary tables of the SWCs and AWCs (Table C-1 and D-1, respectively), the NRC staff noted that several checklists were not included. However, in response to the request for additional information (RAI) 1 (see RAI discussion below), the licensee stated that no new conditions have been identified requiring supplemental information or entry into the CAP; that all conditions were previously identified in the original and supplemental walkdown reports; and that for these issues CRs were generated and dispositioned into the CAP. Therefore, the NRC staff concludes that the exclusion of these checklists does not impact the seismic walkdown results.

The licensee documented cases of potentially adverse seismic conditions (PASCs) in the checklists for further evaluation. Tables 5-1 and 5-2 in Attachment 1 of the initial 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 current status.

Based on the initial review of the checklists, the NRC staff was unable to confirm that all the PASCs identified during the walkdowns were included in this table. As such, by letter dated November 1, 2013, the NRC staff issued two questions in a RAI in order to obtain clarification regarding the process followed by the licensee when evaluating conditions identified in the field during the walkdowns and walk-bys. Specifically, in RAI 1 the NRC 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 RAI 1, the licensee stated that, during the seismic walkdowns, the SWEs, were paired with a station engineer as needed to offer assistance where necessary. In addition, operations and maintenance personnel were available

and called upon as needed. The licensee indicated that condition reports were generated and tracked inside the CAP, for PASCs that could not be dispositioned by the SWEs. The licensee referred to Tables 5-1 and 5-2 of the walkdown report which includes all the PASCs identified during the walkdowns and area walk-bys, for condition report numbers, condition summaries and action completion status. The licensee confirmed that NMP1 meet their current licensing basis, and indicated that no new conditions were identified requiring supplemental information or entry into the CAP.

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

In addition to the information provided above, the licensee stated in Section 5.2.1 of the walkdown report 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.

Section 4.2 of the supplemental walkdown report confirms that additional walkdowns were conducted during the refueling outage (N1R22) in April and May, 2013, to perform internal inspections of twelve cabinets or panels that were not completely inspected or were not opened during the initial walkdowns. The NRC staff reviewed the SWCs provided in Appendices B and C of the supplemental report and confirmed that cabinets were opened to determine if any adverse conditions existed of internal equipment.

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 (LBEs), of the walkdown guidance provides information to licensees regarding the conduct of LBEs for items identified during the seismic walkdowns as degraded, nonconforming, or unanalyzed that might have potential seismic significance.

The NRC staff reviewed Section 6.0 of the NMP1 Walkdown Report, which discusses the process for conducting the seismic LBEs of the PASCs identified during the seismic walkdowns and area walk-bys. In the initial walkdown report, the licensee stated that the issues identified during the seismic walkdowns and area walk-bys would not prevent the equipment from performing its safety-related function. Furthermore, in the supplemental report, the licensee stated that during the supplemental seismic walkdown and area walk-bys there were no identified issues that could have potentially challenged the plant licensing basis. In addition, in response to RAI 1, the licensee stated that, where required, seismic LBEs were completed and documented within the CAP. The licensee initiated corrective actions for any condition where degradation or non-conformance with the design was identified, in order to restore the item to its proper design configuration.

The NRC staff reviewed the CAP entries and the description of the actions taken or planned to address deficiencies. The NRC staff concludes that the licensee appropriately identified

potentially degraded, nonconforming, or unanalyzed conditions and entered them into the CAP, 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 SWELs, 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 (LBEs)
- 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 Section 8.0 of the NMP1 walkdown report and Section 6 of the supplemental walkdown report which describe the conduct of the peer review. In addition, the NRC staff reviewed the response to RAI 2. In RAI 2, the NRC 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 NRC 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 RAI 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 the original and supplemental seismic walkdown reports. In addition, the licensee stated that the personnel involved in performing any given walkdown activity were not a peer reviewer for that same activity for either the original or supplemental seismic walkdown submittal.

The NRC 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 (GL) 88-20, "Individual Plant Examination of External Events for Severe Accident Vulnerabilities," licensees previously had performed a systematic examination to identify any plant-specific vulnerabilities to severe accidents.

Section 7, Table 7 of the initial walkdown report lists the IPEEE improvements or initiatives that have been completed to address vulnerabilities at NMP1.

Based on the NRC staff's review of Section 7 and Table 7 of the initial walkdown report, the NRC staff concludes that the licensee's identification of plant-specific vulnerabilities (including anomalies, outliers and other findings) identified by 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 plant changes or any planned or newly installed protection and mitigation features in both the walkdown report and the supplemental report.

3.6 NRC Oversight

3.6.1 Independent Verification by Resident Inspectors

On July 6, 2012,⁴³ 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 NMP 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 February 11, 2013,⁴⁴ documents the results of this inspection and states that no findings were identified.

4.0 CONCLUSION

The NRC staff concludes that the licensee's implementation of seismic walkdown methodology meets the intent of the walkdown guidance. The NRC staff concludes that the licensee, through the implementation of the walkdown guidance activities and, in accordance with plant processes and procedures, verified the plant configuration with the current seismic licensing basis; addressed degraded, nonconforming, or unanalyzed seismic conditions; and verified the

⁴³ ADAMS Accession No. ML12156A052

⁴⁴ ADAMS Accession No. ML13042A062.

adequacy of monitoring and maintenance programs for protective features. Furthermore, the NRC staff notes that no immediate safety concerns were identified. 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
CONSTELLATION ENERGY NUCLEAR GROUP, LLC
NINE MILE POINT NUCLEAR STATION, UNIT 2
DOCKET NOS 50-410

1.0 INTRODUCTION

On March 12, 2012,⁴⁵ 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) (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,"⁴⁶ 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.

Enclosure 3 of the 50.54(f) letter requested licensees to provide the following:

- a) Information on 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 IPEEE [Individual Plant Examination of External Events] 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.

⁴⁵ Agencywide Documents Access and Management System (ADAMS) Accession No. ML12053A340

⁴⁶ ADAMS Accession No. ML12056A049

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 walkdown process. By letter dated May 29, 2012,⁴⁷ the Nuclear Energy Institute (NEI) staff submitted Electric Power Research Institute (EPRI) 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, 2012,⁴⁸ the NRC staff endorsed the walkdown guidance.

By letter dated November 27, 2012,⁴⁹ Constellation Energy Nuclear Group, LLC (CENG or the licensee) provided a response to Enclosure 3 of the 50.54(f) letter Required Response Item 2, for Nine Mile Point Nuclear Station, Unit 2 (NMP2). The NRC staff reviewed the walkdown report and determined that additional supplemental information would assist the NRC staff in completing its review. In a letter dated November 1, 2013⁵⁰, 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 2, 2013.⁵¹

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 Criteria [GDC] for Nuclear Power Plants," Criterion 2: "Design bases for protection against natural phenomena;" and Appendix A to 10 CFR Part 100, "Reactor Site Criteria." Criterion 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.

⁴⁷ADAMS Package Accession No. ML121640872.

⁴⁸ADAMS Accession No. ML12145A529

⁴⁹ADAMS Accession No. ML12348A086

⁵⁰ADAMS Accession No. ML13304B418

⁵¹ADAMS Accession No. ML13346A011

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.

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 NMP2 in Section 2 of the walkdown report. Consistent with the walkdown guidance, the NRC staff noted that the report includes a summary of the Safe Shutdown Earthquake (SSE) and 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 SSE and the design codes used in the design.

Based on the NRC staff's review, the NRC 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 (EPR1 document 1025286) provides information to licensees regarding the implementation of an appropriate seismic walkdown methodology.

By letter dated November 27, 2012,⁵² the licensee confirmed that it would utilize the walkdown guidance in the performance of the seismic walkdowns at NMP2. 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 (LBEs)

⁵² ADAMS Accession No. ML123420046

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.

The NRC staff reviewed the information provided in Attachment 1, Section 3, and Table 3-1 of the walkdown report, which includes information on the walkdown personnel and their qualifications. Specifically, the NRC 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.

The NRC staff noted that the walkdown report does not provide specific names for the operations staff involved in the walkdown activities. However, the licensee stated that licensed plant operators were involved in the equipment selection and LBEs processes. Since licensed plant operators are qualified by the NRC and continuously train to maintain their license, all licensed plant operators have the appropriate operations knowledge and experience to support the seismic walkdown activities.

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 SWELs

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 NMP2 Base list, SWEL 1 (sample list of designated safety functions equipment), and SWEL 2 (sample list of spent fuel pool (SFP) related equipment). The overall equipment selection process followed the screening process shown in Figures 1-1 and 1-2 of the walkdown guidance. Based on Section 4.2.1 of the walkdown report, NMP2 SWELs 1 and 2 meet 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 direct current (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 all 22 classes of equipment were included in the SWEL 1 as tabulated in Table 4-1.

The NRC staff also noted that a rapid drain-down list containing one item was included as part of the SWEL 2, as described in Section 3 of the guidance. In Section 4.2.3, Rapid Drain-Down of the walkdown report, the licensee stated that two other items were identified which could, if failed, lead to rapid drain-down of the pool. However, this was before applying all of the selection criteria; the items are considered as part of the SFP structure which is outside the scope of the current program. After reviewing the information provided in this section, the NRC staff concludes that the licensee provided sufficient information to justify the exclusion of these two items from the SWEL 2.

After reviewing SWELs 1 and 2, 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 Attachment 1, 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 consisting of two qualified SWEs conducted the seismic walkdowns and area walk-bys. These activities were conducted during the week of July 16, 2012 for all areas.

The walkdown report states that the SWEs both agreed and signed on the results of their seismic walkdowns and area walk-bys before reporting the results of their review. Attachments 2, Table C-1 and Attachment 3, Table D-1 of the walkdown report provide the completed SWCs and AWCs, respectively, documenting the results for each item of equipment on SWEL 1 and SWEL 2 and each area containing SWEL equipment. The licensee used the checklists provided in Appendix C of the walkdown guidance report without modification.

The NRC staff reviewed the original checklists and noted that SWCs and AWCs were all signed on August 23, 2012 following the inspections. The NRC staff reviewed the overall walkdown process described in the walkdown report and additional clarification provided as part of response to RAI1 (see the RAI discussion below).

As stated above, the licensee documented cases of potentially adverse seismic conditions (PASCs) in the checklists for further evaluation. Tables 5-1 and 5-2 in Attachment 1 of the walkdown report list the PASCs identified during the seismic walkdowns and the area walk-bys,

respectively. The tables describe how the condition was addressed (e.g., placement in the CAP), their resolution and its current status.

Based on the review of the checklists, the NRC staff was unable to confirm that all the PASCs identified during the walkdowns were included in this table. As such, by letter dated November 1, 2013, the NRC staff issued two questions in a request for additional information (RAI) in order to obtain clarification regarding the process followed by the licensee when evaluating conditions identified in the field during the walkdowns and walk-bys. Specifically, in RAI 1 the NRC 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 RAI 1, the licensee confirmed that observations that could not be readily judged to be acceptable with respect to its current licensing basis during the walkdown, were identified as PASCs on the SWC and AWC. These PASCs were further evaluated in the field and if the condition was determined to not meet the current licensing basis (CLB) or required additional evaluation conditions were denoted as "N" (No) or "U" (Unknown) in the checklist. All items marked "N" and "U" in the field were entered into the LBE process as PASCs. The licensee referred to Tables 5-1 and 5-2 of the walkdown report which includes a description of all these items. Furthermore, the licensee stated that LBE items not readily concluded through the process to meet their CLB were entered into the CAP. The licensee also clarified that all "U" items were traceable through the Condition Reports listed in these two tables of the initial walkdown report. The licensee confirmed that no new conditions were identified.

After evaluating the licensee's response and reviewing Tables 5-1 and 5-2, the NRC staff concludes that the licensee responded appropriately to RAI 1, PASCs were properly identified and documented and the summary tables included in Tables 5-1 and 5-2 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 walkdown report does not clearly state whether the licensee opened cabinets as part of the walkdowns. However, Attachment 4, Table E-1 of the walkdown report identifies six items that were deemed as inaccessible during the initial walkdowns, whereas Table E-2 contains 17 cabinet internal inspections. The NRC staff noted that items in Table E-2 are related to cabinets that will be opened during the licensee's next refueling outage. Since the licensee has committed to open a representative number of cabinets to verify their internal components and provided the schedules for performing these actions, the NRC staff concludes this is an acceptable approach.

The equipment and areas that were inaccessible during the 180-day period are listed in Attachment 4, Table E-1 of the walkdown report. The list of inaccessible items also includes the condition which caused the delay of the walkdown. A limited number of SWEL components (total of six) were inaccessible at the time of the initial walkdowns. The licensee stated that the internally mounted items on 17 electrical cabinets were inaccessible due to the energized nature of the cabinets. However, the external anchorage conditions and the immediate area surrounding these components were included during the initial walkdown. The walkdowns for

all of the remaining inaccessible items were committed to be completed by the end of the next scheduled refueling outage (spring 2014). The licensee committed to provide a supplemental submittal with the results of these walkdown items by July 31, 2014. The NRC staff concludes that the inaccessible equipment list was developed consistent with the walkdown guidance. The schedule for completion is consistent with the time to the next scheduled outage.

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 (LBEs), of the walkdown guidance provides information to licensees regarding the conduct of LBEs for items identified during the seismic walkdowns as degraded, nonconforming, or unanalyzed that might have potential seismic significance.

The NRC staff reviewed Section 6.0 of the NMP 2 walkdown report, which discusses the process for conducting the seismic LBEs of the PASCs identified during the seismic walkdowns and area walk-bys. The licensee stated that the issues identified during the Seismic Walkdowns and Area Walk-Bys as noted in Section 5 were not determined to be PASCs. Therefore, no formal LBEs are necessary and none were performed.

The NRC staff reviewed the CAP entries and the description of the actions taken or planned to address deficiencies. The NRC staff concludes that the licensee appropriately identified potentially degraded, nonconforming, or unanalyzed conditions and entered them into the CAP, 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 SWELs, 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 Section 8.0 of the NMP 2 Walkdown Report which describes the conduct of the peer review. In addition, the NRC staff reviewed the response to RAI 2. In RAI 2, the NRC 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 NRC 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 that was not a peer reviewer for that same activity. In response to RAI 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 the original and supplemental seismic walkdown reports. In addition, the licensee stated that none of the peer review engineers were involved in the seismic walkdown inspection process in order to further demonstrate the independence of the peer review process.

The NRC staff reviewed the licensee's summary of each of these activities, which included the peer review team member's 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 meet 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 (GL) 88-20, "Individual Plant Examination of External Events for Severe Accident Vulnerabilities," licensees previously had performed a systematic examination to identify any plant-specific vulnerabilities to severe accidents.

The licensee provided background information in Section 7 of the original report regarding their IPEEE program. The licensee stated that the NMP2 IPEEE Seismic Improvement Initiatives included 2 items for which seismic vulnerabilities (i.e., seismic anomalies, outliers or other findings) were previously identified during the IPEEE program. A description of these conditions was provided in Table 7-1 of the initial walkdown report. During the walkdowns, the SWEs verified the resolutions to the IPEEE vulnerabilities associated with these 2 items and when they were implemented. The licensee stated that all the IPEEE identified issues have been resolved by 1996.

Based on the NRC staff's review of Section 7 of the initial walkdown report, the NRC staff concludes that the licensee's identification of plant-specific vulnerabilities (including anomalies,

outliers and other findings) identified by 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 plant changes or any planned or newly installed protection and mitigation features in both the walkdown report and the supplemental report.

3.6 NRC Oversight

3.6.1 Independent Verification by Resident Inspectors

On July 6, 2012,⁵³ 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 NMP 2 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 February 11, 2013,⁵⁴ 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 listed in Attachment 4, Table E-1 of the walkdown report. As discussed above, the walkdowns for all of the remaining inaccessible items were committed to be completed by the end of the next scheduled refueling outage (spring 2014). The licensee committed to provide a supplemental submittal with the results of these walkdown items by July 31, 2014.

5.0 CONCLUSION

The NRC staff concludes that the licensee's implementation of seismic walkdown methodology meets the intent of the walkdown guidance. The NRC staff concludes that the licensee, through the implementation of the walkdown guidance activities and, in accordance with plant processes and procedures, verified 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 NRC staff acknowledges that a supplemental letter will be provided by July 31, 2014 addressing the remaining inaccessible items consistent with the regulatory commitment. 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.

⁵³ ADAMS Accession No. ML12156A052

⁵⁴ ADAMS Accession No. ML13042A062.

M. Korsnick

- 2 -

The NRC staff determined that sufficient information was provided to be responsive to Enclosure 3 of the 50.54(f) letter.

For the Nine Mile Point, Unit 2, the NRC staff concludes that the licensee's implementation of seismic walkdown methodology meets the intent of the walkdown guidance. The NRC staff concludes that the licensee, through the implementation of the walkdown guidance activities and, in accordance with plant processes and procedures, verified 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 NRC staff acknowledges that a supplemental letter will be provided by July 31, 2014 addressing the remaining inaccessible items consistent with the regulatory commitment. 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 there are any questions, please contact me at (301) 415-1476 or email at Mohan.Thadani@nrc.gov.

Sincerely,

/RA/

Mohan C. Thadani, Senior Project Manager
Plant Licensing Branch I-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos.: 50-317, 50-318, 50-244,
50-220, and 50-410

Enclosures:

1. Staff Assessment for Calvert Cliffs Nuclear Power Plant, Unit 1
2. Staff Assessment for Calvert Cliffs Nuclear Power Plant, Unit 2
3. Staff Assessment for R.E. Ginna Nuclear Power Plant
4. Staff Assessment for Nine Mile Point Nuclear Station, Unit 1
5. Staff Assessment for Nine Mile Point Nuclear Station, Unit 2

cc w/enclosures: See next page.

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