



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

March 7, 2014

Mr. Rafael Flores
Senior Vice President and
Chief Nuclear Officer
Attention: Regulatory Affairs
Luminant Generation Company LLC
P.O. Box 1002
Glen Rose, TX 76043

SUBJECT: COMANCHE PEAK NUCLEAR POWER PLANT, UNITS 1 AND 2 - STAFF
ASSESSMENT OF THE SEISMIC WALKDOWN REPORT SUPPORTING
IMPLEMENTATION OF NEAR-TERM TASK FORCE RECOMMENDATION 2.3
RELATED TO THE FUKUSHIMA DAI-ICHI NUCLEAR POWER PLANT
ACCIDENT (TAC NOS. MF0110 AND MF0111)

Dear Mr. Flores:

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, as supplemented by letters dated July 1 and September 12, 2013, Luminant Generation Company LLC (the licensee) submitted its Seismic Walkdown Report as requested in Enclosure 3 of the 50.54(f) letter for the Comanche Peak Nuclear Power Plant (CPNPP), Units 1 and 2. From July 9 to July 11, 2013, an NRC audit team conducted an on-site audit to gain a better understanding of the methods and procedures used by the licensee to conduct the seismic walkdowns and to facilitate the NRC staff review of the walkdown report.

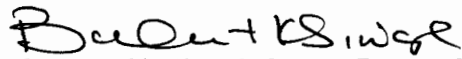
The NRC staff reviewed the information provided and, as documented in the enclosed staff assessment, determined that sufficient information was provided to be responsive to Enclosure 3 of the 50.54(f) letter. This concludes the NRC's efforts associated with TAC Nos. MF0110 and MF0111.

R. Flores

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If you have any questions, please contact me at 301-415-3016 or by e-mail at Balwant.Singal@nrc.gov.

Sincerely,



Balwant K. Singal, Senior Project Manager
Plant Licensing Branch IV
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos. 50-445 and 50-446

Enclosures:

1. Staff Assessment of Seismic Walkdown Report for CPNPP, Unit 1
2. Staff Assessment of Seismic Walkdown Report for CPNPP, Unit 2

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STAFF ASSESSMENT OF SEISMIC WALKDOWN REPORT
NEAR-TERM TASK FORCE RECOMMENDATION 2.3 RELATED TO
THE FUKUSHIMA DAI-ICHI NUCLEAR POWER PLANT ACCIDENT
LUMINANT GENERATION COMPANY LLC
COMANCHE PEAK NUCLEAR POWER PLANT, UNIT 1
DOCKET NO. 50-445

1.0 INTRODUCTION

On March 12, 2012¹, 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] 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 walkdown process. By letter dated May 29, 2012³, the Nuclear Energy Institute (NEI) staff submitted Electric Power Research Institute (EPRI) document 1025286, "Seismic Walkdown

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

² ADAMS Accession No. ML12056A049.

³ ADAMS Package Accession No. ML121640872.

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, 2012⁴, the NRC staff endorsed the walkdown guidance.

By letters dated November 27, 2012, and July 1, 2013⁵, Luminant Generation Company, LLC (the licensee) provided responses for Comanche Peak Nuclear Power Plant (CPNPP) Units 1 and 2. The NRC staff reviewed the walkdown reports and determined that a regulatory audit would assist the staff in completing its review. A regulatory audit was conducted from July 9 to July 11, 2013, to gain a better understanding of the processes and procedures used by the licensee in conducting the walkdowns and walk-bys. In response to the NRC staff’s questions during the audit, the licensee supplemented the walkdown report by letter dated September 12, 2013⁶.

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 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.

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.

⁴ ADAMS Accession No. ML12145A529.

⁵ ADAMS Accession Nos. ML13009A269 and ML13192A179.

⁶ ADAMS Accession No. ML13267A158.

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 CPNPP, Unit 1 in Section 1 of the walkdown report. Consistent with the walkdown guidance, the NRC staff noted that the report includes a summary of the Operating Basis Earthquake (OBE) and 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 1 of the walkdown report and Section 2 of the supplemental report, particularly the summary of the OBE, SSE and the design codes and methodology used in the design of CPNPP, Unit 1.

Based on its 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) provide information to licensees regarding the implementation of an appropriate seismic walkdown methodology.

By letter dated July 10, 2012⁷, the licensee confirmed that it would utilize the walkdown guidance in the performance of the seismic walkdowns at CPNPP, Unit 1. The walkdown reports dated November 27, 2012, and July 1, 2013, together with the supplemental report dated September 12, 2013, did not identify deviations from the walkdown guidance. The NRC staff reviewed the procedure and methodology and concludes that the walkdown report meets the intent of 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

⁷ ADAMS Accession No. ML12201A095.

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 2 of the walkdown report, and Tables 1 and 5 of the supplemental report, which includes information on the walkdown personnel and their qualifications. Specifically, the staff reviewed the summary of the background, experience, and level of involvement for the 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 this information and additional clarification obtained during the audit, 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 CPNPP 1 Base list, SWEL 1 (sample list of designated safety function equipment) and SWEL 2 (sample list of spent fuel pool related equipment), as well as CPNPP, Unit 1 and 2 common Base lists. This equipment selection process followed the screening process shown in Figure 1-1 and 1-2 of the walkdown guidance. Based on walkdown report Tables G-2 and G-4, CPNPP 1 SWELs 1 and 2 meet 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 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).

As part of the SWEL 2 items, the NRC staff noted that a rapid drain-down list was not included. In Section (4) of the supplemental report, the licensee stated “there are no rapid drain-down components identified in CPNPP, Unit 1.” After reviewing the information provided in this section, the staff concludes that the licensee provided sufficient information to justify that there are no items that could lead to rapid drain-down of the CPNPP, Unit 1 spent fuel pool.

After reviewing SWELs 1 and 2, the NRC staff concludes that the sample of SSCs represents 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 4.3 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 “two-person teams of trained Seismic Walkdown Engineers” conducted the seismic walkdowns and area walk-bys together from August 27-30, 2012, and September 4-6, 2012. The walkdown report also states 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. Appendices A and B of the walkdown report provide the completed seismic walkdown checklists (SWCs) and area walk-by checklists (AWCs) documenting the results for each item of equipment on SWELs 1 and 2 and each area containing SWEL equipment, respectively. The licensee used the checklists provided in Appendix C of the walkdown guidance with only minor modifications to the headers. The licensee documented cases of potentially adverse seismic conditions (PASCs) in the checklists for further evaluation. A summary of the results of the Seismic Walkdowns and Area Walk-Bys is included in Section 4.3 of the walkdown report. This summary includes an overview of the number of items walked down and the number of areas walked-by. The number of PASCs identified and a summary of the nature of these conditions are also provided.

Page 4-3 lists PASC identified during the Seismic Walkdowns and the Area Walk-bys. Pages 5-1 and 5-2 describe how each condition has been addressed (e.g., placement in the CAP) and its current status. The licensee provided the status of each item in the supplemental report dated September 12, 2013. A tabulated report summarizing the eight items is provided in Appendix D, “Licensing Basis Evaluation Summary.”

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

Finally, although the walkdown report does not clearly state whether the licensee opened cabinets as part of the walkdowns, the licensee clarified during the audit that cabinets were opened during the walkdowns for internal inspections.

Based on the information provided in the licensee's submittals, a detailed review of SWC and AWCs and additional clarification obtained during the site audit, the NRC staff concludes that the licensee's implementation of the walkdown process meets the intent of the walkdown guidance.

3.2.4 Licensing Basis Evaluations and Results

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

The NRC staff reviewed Section 5 of the CPNPP, Unit 1 walkdown report, which discusses the process for conducting the seismic licensing basis evaluations of the potentially adverse seismic conditions identified during the seismic walkdowns and area walk-bys. The licensee stated that it performed its licensing basis evaluation and resolution for the potentially adverse seismic conditions within the plant's CAP. Appendix D tabulates the summary of nine (9) licensing basis evaluations. Table 2 of the supplemental report lists the ten potentially adverse seismic conditions identified at CPNPP, Unit 1 and their current status. For CPNPP, Units 1 and 2, the licensee entered 94 items into the CAP from the online walkdowns and walk-bys. Six additional items were added into Table 4 after the NRC audit on July 9-11, 2013. These entries into the CAP resulted in the issuance of 19 Condition Reports (CRs).

The NRC staff noted that the process for conducting the licensing basis evaluations and entering items in the CAP as described in the licensee's submittal is consistent with the walkdown guidance. The staff also noted that items that could not be readily (within a few days) dispositioned by a licensing basis evaluation were entered into the CAP; however, there were instances where the staff noted that the process took longer than several days. This issue was discussed during the audit. For these specific cases, the licensee explained that six CRs were opened after the completion of the walkdowns to better document the basis for the engineering judgment by SWEs. The staff concluded that the licensee provided sufficient information to justify that these cases were isolated and that in all cases, issues were dispositioned appropriately and in a timely manner.

The NRC staff reviewed the CAP entries and the analysis of actions taken or planned to address deficiencies. The 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 6 of the CPNPP, Unit 1 walkdown report and Section 6 of the supplemental report, which describes the conduct of the peer review. The licensee described the results and any subsequent actions taken in response to the peer review in the same sections. The staff noted that all the activities identified on page 6-1 of the walkdown guidance were included as part of the peer review process. The staff reviewed the licensee's summary of each of these activities, 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 88-20, "Individual Plant Examination for Severe Accident Vulnerabilities – 10 CFR 50.54(f)," dated November 23, 1988⁸, licensees previously had performed a systematic examination to identify any plant-specific vulnerabilities to severe accidents.

⁸ ADAMS Accession No. ML031150465.

The licensee stated in the report that one enhancement and three findings were identified in the original IPEEE walkdown report (Report No. ER-EA-001, dated August 1994). The related components were selected as part of the SWEL and these issues were resolved as part of the IPEEE program. No adverse conditions and no seismic vulnerabilities were identified in the final IPEEE walkdown report (Report No. ER-EA-008, dated June 1995). Those documents (ER-EA-001 and ER-EA-008) were available to the staff for review during the audit.

Based on its 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, 2012⁹, 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 licensee implemented the seismic walkdowns in accordance with the walkdown guidance. Additionally, the inspectors independently performed walkdowns of a sample of seismic protection features. One Green non-cited violation was identified. This condition was entered into the plant CAP for resolution. The inspection report dated May 2, 2013¹⁰, documents the results of this inspection.

3.6.2 Site Audit

The NRC staff performed an audit of CPNPP, Unit 1 and 2 during the week of July 9-11, 2013. During the audit, the staff gained a better understanding of the process used by the licensee to perform the walkdowns, including differences from the walkdown guidance. The staff identified and conveyed to the licensee the specific issues to be addressed and the licensee subsequently submitted a supplemental report. The staff also noted that the licensee discussed several self-identified issues in the revised walkdown report. The audit report dated October 23, 2013¹¹, provides the results of this audit for CPNPP, Units 1 and 2.

⁹ ADAMS Accession No. ML12156A052.

¹⁰ ADAMS Accession No. ML13123A139.

¹¹ ADAMS Accession No. ML13296A543.

4.0 CONCLUSION

The NRC staff concludes that the licensee's implementation of seismic walkdown methodology meets the intent of the walkdown guidance. The staff concludes that, 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 staff notes that no immediate safety concerns were identified. The NRC staff concludes that the licensee responded appropriately 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
LUMINANT GENERATION COMPANY LLC
COMANCHE PEAK NUCLEAR POWER PLANT, UNIT 2
DOCKET NO. 50-446

1.0 INTRODUCTION

On March 12, 2012¹, 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] 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 walkdown process. By letter dated May 29, 2012³, the Nuclear Energy Institute (NEI) staff submitted Electric Power Research Institute (EPRI) document 1025286, "Seismic Walkdown

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

² ADAMS Accession No. ML12056A049.

³ ADAMS Package Accession No. ML121640872.

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, 2012⁴, the NRC staff endorsed the walkdown guidance.

By letters dated November 27, 2012, and July 1, 2013⁵, Luminant Generation Company, LLC (the licensee) provided responses for Comanche Peak Nuclear Power Plant (CPNPP) Units 1 and 2. The NRC staff reviewed the walkdown reports and determined that a regulatory audit would assist the staff in completing its review. A regulatory audit was conducted from July 9 to July 11, 2013, to gain a better understanding of the processes and procedures used by the licensee in conducting the walkdowns and walk-bys. In response to the NRC staff's questions during the audit, the licensee supplemented the walkdown report by letter dated September 12, 2013⁶.

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 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.

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.

⁴ ADAMS Accession No. ML12145A529.

⁵ ADAMS Accession Nos. ML13009A269 and ML13192A179.

⁶ ADAMS Accession No. ML13267A158.

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 CPNPP, Unit 2 in Section 1 of the walkdown report. Consistent with the walkdown guidance, the NRC staff noted that the report includes a summary of the Operating Basis Earthquake (OBE) and 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 1 of the walkdown report and Section 2 of the supplemental report, particularly the summary of the OBE, SSE and the design codes and methodology used in the design of CPNPP, Unit 2.

Based on its 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) provide information to licensees regarding the implementation of an appropriate seismic walkdown methodology.

By letter dated July 10, 2012⁷, the licensee confirmed that it would utilize the walkdown guidance in the performance of the seismic walkdowns at CPNPP, Unit 2. The walkdown reports dated November 27, 2012, and July 1, 2013, together with the supplemental report dated September 12, 2013, did not identify deviations from the walkdown guidance. The NRC staff reviewed the procedure and methodology and concludes that the walkdown report meets the intent of 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

⁷ ADAMS Accession No. ML12201A095.

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 2 of the walkdown report, and Tables 1 and 5 of the supplemental report, which includes information on the walkdown personnel and their qualifications. Specifically, the staff reviewed the summary of the background, experience, and level of involvement for the 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 this information and additional clarification obtained during the audit, 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 CPNPP 2 Base list, SWEL 1 (sample list of designated safety function equipment) and SWEL 2 (sample list of spent fuel pool related equipment), as well as CPNPP, Unit 1 and 2 common Base lists. This equipment selection process followed the screening process shown in Figure 1-1 and 1-2 of the walkdown guidance. Based on walkdown report Tables G-2 and G-4, CPNPP 2 SWELs 1 and 2 meet 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 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).

As part of the SWEL 2 items, the NRC staff noted that a rapid drain-down list was not included. In Section (4) of the supplemental report, the licensee stated "there are no rapid drain-down components identified in CPNPP, Unit 2." After reviewing the information provided in this section, the staff concludes that the licensee provided sufficient information to justify that there are no items that could lead to rapid drain-down of the CPNPP, Unit 2 spent fuel pool.

After reviewing SWELs 1 and 2, the NRC staff concludes that the sample of SSCs represents 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 4.3 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 "two-person teams of trained Seismic Walkdown Engineers" conducted the seismic walkdowns and area walk-bys together from August 27-30, 2012, and September 4-6, 2012. In addition, a subsequent set of walkdowns were performed during the outage in the spring of 2013, as stated in the July 1, 2013, letter from the licensee. The purpose of the last activity was to complete a number of items that were inaccessible during the initial walkdowns.

The walkdown report also states 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. Appendices A and B of the walkdown report provide the completed seismic walkdown checklists (SWCs) and area walk-by checklists (AWCs) documenting the results for each item of equipment on SWELs 1 and 2 and each area containing SWEL equipment, respectively. The licensee used the checklists provided in Appendix C of the walkdown guidance with only minor modifications to the headers. The licensee documented cases of potentially adverse seismic conditions (PASCs) in the checklists for further evaluation. A summary of the results of the Seismic Walkdowns and Area Walk-Bys is included in Section 4.3 of the walkdown report. This summary includes an overview of the number of items walked down and the number of areas walked-by. The number of PASCs identified and a summary of the nature of these conditions are also provided.

Page 4-3 lists PASC identified during the Seismic Walkdowns and the Area Walk-bys. Pages 5-1 and 5-2 describe how each condition has been addressed (e.g., placement in the CAP) and its current status. The licensee provided the status of each item in the supplemental report dated September 12, 2013. A tabulated report summarizing the four items is provided in Appendix D, "Licensing Basis Evaluation Summary."

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

Finally, although the walkdown report does not clearly state whether the licensee opened cabinets as part of the walkdowns, the licensee clarified during the audit that cabinets were opened during the walkdowns for internal inspections.

Based on the information provided in the licensee's submittals, a detailed review of SWC and AWCs and additional clarification obtained during the site audit, the NRC staff concludes that the licensee's implementation of the walkdown process meets the intent of the walkdown guidance.

3.2.4 Licensing Basis Evaluations and Results

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

The NRC staff reviewed Section 5 of the CPNPP, Unit 2 walkdown report, which discusses the process for conducting the seismic licensing basis evaluations of the potentially adverse seismic conditions identified during the seismic walkdowns and area walk-bys. The licensee stated that it performed its licensing basis evaluation and resolution for the potentially adverse seismic conditions within the plant's CAP. Appendix D tabulates the summary of the four (4) licensing basis evaluations. Table 2 of the supplemental report lists the three (3) potentially adverse seismic conditions identified at CPNPP, Unit 2, and their current status. For CPNPP, Units 1 and 2, the licensee entered 94 items into the CAP from the online walkdowns and walk-bys. Six additional items were added into Table 4 after the NRC audit on July 9-11, 2013. These entries into the CAP resulted in the issuance of 19 Condition Reports (CRs).

The NRC staff noted that the process for conducting the licensing basis evaluations and entering items in the CAP as described in the licensee's submittal is consistent with the walkdown guidance. The staff also noted that items that could not be readily (within a few days) dispositioned by a licensing basis evaluation were entered into the CAP; however, there were instances where the staff noted that the process took longer than several days. This issue was discussed during the audit. For these specific cases, the licensee explained that six CRs were opened after the completion of the walkdowns to better document the basis for the engineering judgment by SWEs. The staff concluded that the licensee provided sufficient information to justify that these cases were isolated and that in all cases, issues were dispositioned appropriately and in a timely manner.

The NRC staff concludes that the licensee entered potential deficiencies against the licensing basis into the CAP and addressed these deficiencies through licensing basis evaluations or entry into the CAP, and that these actions meet the intent of the walkdown guidance. The staff reviewed the CAP entries and the analysis of actions taken or planned to address deficiencies. The 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 6 of the CPNPP, Unit 2 walkdown report and Section 6 of the supplemental report, which describes the conduct of the peer review. The licensee described the results and any subsequent actions taken in response to the peer review in the same sections. The staff noted that all the activities identified on page 6-1 of the walkdown guidance were included as part of the peer review process. The staff reviewed the licensee's summary of each of these activities, 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 88-20, "Individual Plant Examination for Severe Accident Vulnerabilities – 10 CFR 50.54(f)," dated November 23, 1988⁸, licensees previously had performed a systematic examination to identify any plant-specific vulnerabilities to severe accidents.

The licensee stated in the report that one enhancement and three findings were identified in the original IPEEE walkdown report (Report No. ER-EA-001, dated August 1994). The related components were selected as part of the SWEL and these issues were resolved as part of the IPEEE program. No adverse conditions and no seismic vulnerabilities were identified in the final IPEEE walkdown report (Report No. ER-EA-008, dated June 1995). Those documents (ER-EA-001 and ER-EA-008) were available to the staff for review during the audit.

Based on its 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, 2012⁹, 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 licensee implemented the seismic walkdowns in accordance with the walkdown guidance. Additionally, the inspectors independently performed walkdowns of a sample of seismic protection features. One finding, a Green non-cited violation, was identified. The licensee entered the condition into the CAP and corrected the condition on October 25, 2012. The inspection report dated May 2, 2013¹⁰, documents the results of this inspection.

3.6.2 Site Audit

The NRC staff performed an audit of CPNPP, Unit 1 and 2 during the week of July 9-11, 2013. During the audit, the staff gained a better understanding of the process used by the licensee to perform the walkdowns, including differences from the walkdown guidance. The staff identified and conveyed to the licensee the specific issues to be addressed and the licensee subsequently submitted a supplemental report. The staff also noted that the licensee discussed several self-identified issues in the revised walkdown report. The audit report dated October 23, 2013,¹¹ provides the results of this audit for CPNPP, Units 1 and 2.

⁸ ADAMS Accession No. ML031150465.

⁹ ADAMS Accession No. ML12156A052.

¹⁰ ADAMS Accession No. ML13123A139.

¹¹ ADAMS Accession No. ML13296A543.

4.0 CONCLUSION

The NRC staff concludes that the licensee's implementation of seismic walkdown methodology meets the intent of the walkdown guidance. The staff concludes that, 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 staff notes that no immediate safety concerns were identified. The NRC staff concludes that the licensee responded appropriately to Enclosure 3 of the 50.54(f) letter, dated March 12, 2012.

R. Flores

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If you have any questions, please contact me at 301-415-3016 or by e-mail at Balwant.Singal@nrc.gov.

Sincerely,

/RA/

Balwant K. Singal, Senior Project Manager
Plant Licensing Branch IV
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos. 50-445 and 50-446

Enclosures:

1. Staff Assessment of Seismic Walkdown Report for CPNPP, Unit 1
2. Staff Assessment of Seismic Walkdown Report for CPNPP, Unit 2

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