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

December 9, 2013

Mr. Lawrence J. Weber
Senior Vice President and
Chief Nuclear Officer
Indiana Michigan Power Company
Nuclear Generation Group
One Cook Place
Bridgman, MI 49106

SUBJECT: DONALD C. COOK NUCLEAR PLANT, UNIT 1 - 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 NO. MF0114)

Dear Mr. Weber:

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 26, 2012, as supplemented by letter dated September 13, 2013, Indiana Michigan Power Company (I&M) submitted its Seismic Walkdown Report as requested in Enclosure 3 of the 50.54(f) letter for the Donald C. Cook Nuclear Plant, Unit 1. From July 17 to July 19, 2013, an NRC audit team conducted an on-site audit to gain a better understanding of the methods and procedures used by I&M 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 you have provided sufficient information to be responsive to Enclosure 3 of the 50.54(f) letter. This concludes the NRC's efforts associated with TAC No. MF0114.

If you have any questions, please contact me at 301-415-4037 or by e-mail at Thomas.Wengert@nrc.gov.

Sincerely,

Thomas J. Wengert, Senior Project Manager
Plant Licensing Branch III-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-315

Enclosure:
Staff Assessment of Seismic Walkdown Report

cc w/encl: Distribution via Listserv

STAFF ASSESSMENT OF SEISMIC WALKDOWN REPORT

NEAR-TERM TASK FORCE RECOMMENDATION 2.3 RELATED TO

THE FUKUSHIMA DAI-ICHI NUCLEAR POWER PLANT ACCIDENT

INDIANA MICHIGAN POWER COMPANY

DONALD C. COOK NUCLEAR PLANT, UNIT 1

DOCKET NO. 50-315

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.

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

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

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

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

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

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

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

In accordance with the 50.54(f) letter, Enclosure 3, Required Response Item 2, licensees were required to submit a response within 180 days of the NRC's endorsement of the seismic walkdown process. By letter dated May 29, 2012,[3] the Nuclear Energy Institute (NEI) staff

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[1] Agencywide Documents Access and Management System (ADAMS) Accession No. ML12053A340.
[2] ADAMS Accession No. ML12056A049
[3] ADAMS Package Accession No. ML121640872.

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 26, 2012,[5] Indiana Michigan Power Company (the licensee) provided a response to Enclosure 3 of the 50.54(f) letter Required Response Item 2, for Donald C. Cook Nuclear Plant, Unit 1 (CNP-1). The NRC staff reviewed the walkdown report and determined that a regulatory audit would assist the staff in completing its review. A regulatory audit was conducted from July 17 to July 19, 2013, to gain an improved 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 13, 2013.[6]

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) 2: "Design Bases for Protection Against Natural Phenomena;" and Appendix A to 10 CFR Part 100, "Reactor Site Criteria." GDC 2 states that SSCs important to safety at nuclear power plants shall be designed to withstand the effects of natural phenomena such as earthquakes, tornadoes, hurricanes, floods, 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. As required by 10 CFR 50.2, each licensee should have identified the specific functions each SSC of a facility must perform, and the specific values or ranges of values chosen for controlling parameters as reference bounds for the design.

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

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

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[4] ADAMS Accession No. ML12145A529.
[5] ADAMS Package Accession No. ML123400511.
[6] ADAMS Accession No. ML13267A315.

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 CNP-1 in Section 2 of the seismic walkdown report. Consistent with the walkdown guidance, the staff noted that the report includes a summary of the Operating Basis Earthquake (OBE) and Design Basis Earthquake (DBE) and a description of the codes, standards, and methods 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 seismic walkdown report, focusing on the summary of the OBE, DBE, and the design codes used in the design of CNP-1.

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

3.2 Seismic Walkdown Methodology Implementation

Section 2, Personnel Qualifications; Section 3, Selection of SSCs; Section 4, Seismic Walkdowns and Area Walk-Bys; and Section 5, Seismic Licensing Basis Evaluations, of the walkdown guidance provide guidance to licensees regarding the implementation of an appropriate seismic walkdown methodology. By letter dated June 29, 2012,[7] the licensee confirmed that it would utilize the walkdown guidance in performance of the seismic walkdowns at CNP-1.

The walkdown report dated November 26, 2012, did not identify any deviations from the walkdown guidance. However, the supplemental letter and revised walkdown report discussed one exception from the guidance: the submittal of a combined walkdown report for both units. The licensee asserted that the submission of one walkdown report for both units was consistent with the IPEEE submittal. The NRC staff reviewed the revised statements justifying the exception to the walkdown guidance, noting that the licensee provided separate Seismic Walkdown Equipment Lists (SWELs) and checklists for each unit. Therefore, the staff concludes that the submittal of one report for both units, although a deviation from the walkdown guidance, is acceptable.

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

- Personnel Qualifications
- Development of SWELs
- Implementation of Walkdown Process
- Licensing Basis Evaluations and Results

[7] ADAMS Accession No. ML121910348.

3.2.1 Personnel Qualifications

Section 2, Personnel Qualifications, of the walkdown guidance provides licensees with qualification information for personnel who will be 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 the walkdown 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 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 SWELs

Section 3, Selection of SSCs, of the walkdown guidance provides guidance 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 CNP-1 base list, SWEL 1 (sample list of designated safety functions equipment) and SWEL 2 (sample list of spent fuel pool related equipment), as well as a common CNP Unit 1 and Unit 2 base list. This equipment selection process followed the screening process shown in Figures 1-1 and 1-2 of the walkdown guidance. Based on walkdown report Tables B-4 and B-5, CNP-1 SWELs 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 DC power using inverters and therefore do not have motor generators) or the equipment being screened out during the screening process (the screening process is described in Section 3 of the walkdown guidance). Based on the information provided, the NRC staff noted that a detailed explanation was provided justifying cases where specific classes of equipment were not included as part of the SWEL, and concludes that these exclusions are acceptable.

The NRC staff also noted that a rapid drain-down list was not included as part of the SWEL 2, as described in Section 3 of the guidance. In Section 4.2.2 of the walkdown report, the licensee stated "there are no rapid drain-down concerns in [CNP-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 CNP-1 spent fuel pool.

After reviewing the SWEL 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 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 Walkdown Process

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

The NRC staff reviewed Section 5 of the walkdown report, which summarizes the results of the seismic walkdowns and area walk-bys, including an overview of the number of items walked down and the number of areas walked-by. The walkdown report states that two-person teams of trained SWEs conducted the seismic walkdowns and area walk-bys together during the weeks of September 10, 2012, and September 17, 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 C and D 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 the SWEL (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 NRC staff reviewed these checklists and noted they were all signed on October 18, 2012. During the audit the staff asked the licensee why checklists were completed one day and signed approximately one month later. The licensee explained the internal process that was followed after the checklists were completed, which included seismic walkdown team discussions and management approval before formally signing and dating the checklist. This process resulted in two sets of SWCs and AWCs. The first set included those checklists completed in the field when walkdowns occurred and the second set included the final checklists sent to the NRC. These final checklists were those that were formally signed and dated, and included the outcomes and disposition documentation for identified conditions (e.g., reviewer comments, calculation reference, CAP identifications).

The licensee documented cases of potentially adverse seismic conditions (PASCs) in the checklists for further evaluation. Tables 5-1 and 5-2 of the walkdown report list the PASCs identified during the initial seismic walkdowns and the area walk-bys, respectively. Tables 5-5 and 5-6 of the walkdown report list the PASCs identified during the outage seismic walkdowns and the area walk-bys, respectively. The tables describe how the condition was addressed (e.g., placement in the CAP) and its current status.

In addition to the information provided above, the NRC staff noted 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.

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. This information was confirmed by the NRC staff upon review of the SWCs which document that electrical cabinets were opened.

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

3.2.4 Licensing Basis Evaluations and Results

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

The NRC staff reviewed Section 6 of the CNP-1 Walkdown Report, which discusses the process for conducting the seismic licensing basis evaluations of the PASCs identified during the seismic walkdowns and area walk-bys. The licensee stated that it performed its licensing basis evaluations and resolved PASCs using the plant's CAP. Tables 5-1, 5-2, 5-5, and 5-6 list the key licensee findings, and provide a complete list of the potentially degraded, nonconforming, or unanalyzed conditions. These 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 revised walkdown report stated that the seismic housekeeping issues identified by the licensee during the walkdowns and walk-bys, and those identified by the staff during the audit had all been resolved.

The NRC staff notes 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 process took longer than several days. This issue was discussed during the audit. The staff concluded that the licensee provided sufficient information to justify that these cases were isolated and that in most 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, in general, 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 a peer review 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 SWEL
- 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 submittal report
- Summarize the results of the peer review process in the submittal report

The NRC staff reviewed the information provided in Section 8 of the CNP-1 Walkdown 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 section. 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 meet the intent of Section 6 of the walkdown guidance.

3.4 IPEEE Information

Section 7, IPEEE Vulnerabilities, of the walkdown guidance provides licensees with guidance regarding the process licensees were to use to address and report the evaluations conducted, and actions taken in response to vulnerabilities identified during the IPEEE program.

The licensee summarized the actions taken to reduce or eliminate the seismic vulnerabilities identified by the IPEEE in Section 7 of the walkdown report.

The licensee provided Tables 7-1, 7-2, and 7-3 in the walkdown report listing, respectively, the findings, maintenance and housekeeping issues, and the design issues identified during the

IPEEE. The licensee stated that it closed or resolved all issues identified during the IPEEE program. During the audit, the NRC staff requested that the resolution dates for these issues be provided in the supplemental submittal as described in the walkdown guidance. In Tables 7-1, 7-2, and 7-3 of the supplemental walkdown report, the licensee identified the dates when it resolved the IPEEE issues.

Based on the NRC staff's review of Section 7 of the walkdown report, the staff concludes that the licensee's identification of plant-specific vulnerabilities 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,[8] 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 CNP-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,[9] documents the results of this inspection.

3.6.2 Site Audit

The NRC staff performed an audit of CNP, Units 1 and 2 during the week of July 15, 2013. During the audit, the staff identified and conveyed to the licensee the specific issues to be addressed, and the licensee subsequently submitted a supplemental walkdown report. The staff also noted that the licensee discussed several self-identified issues in the revised walkdown report. The audit report dated November 21, 2013,[10] provides the results of this audit for CNP, Units 1 and 2.

4.0 CONCLUSION

The NRC staff concludes that the licensee's implementation of seismic walkdown methodology meets the intent of the walkdown guidance for CNP-1. 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

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[8] ADAMS Accession No. ML12156A052.
[9] ADAMS Accession No. ML13042A356.
[10] ADAMS Accession No. ML13294A543.

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, for CNP-1.

If you have any questions, please contact me at 301-415-4037 or by e-mail at Thomas.Wengert@nrc.gov.

Sincerely,

/ ***RA*** /

Thomas J. Wengert, Senior Project Manager
Plant Licensing Branch III-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-315

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Staff Assessment of Seismic Walkdown Report

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