June 30, 2004

Mr. Mano K. Nazar
Senior Vice President and Chief Nuclear Officer
Indiana Michigan Power Company
Nuclear Generation Group
500 Circle Drive
Buchanan, MI 49107

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION FOR THE REVIEW OF DONALD C. COOK NUCLEAR PLANT, UNITS 1 AND 2 LICENSE RENEWAL APPLICATION

Dear Mr. Nazar:

By letter dated October 31, 2003, Indiana Michigan Power Company submitted an application pursuant to 10 CFR Part 54, to renew the operating licenses for the Donald C. Cook Nuclear Plant (CNP), Units 1 and 2, for review by the U.S. Nuclear Regulatory Commission (NRC). The NRC staff is reviewing the information contained in the license renewal application (LRA) and has identified areas where additional information is needed to complete the review. Specifically, the requests for additional information (RAIs) are from CNP LRA Sections B.1.4, B.1.26, B.1.27, B.1.5, B.1.24, 3.1 and 4.2.1 (Enclosure).

Based on discussions with Mr. Richard Grumbir of your staff, a mutually agreeable date for your response is within 30 days of the date of this letter. If you have any questions regarding this letter or if circumstances result in your need to revise the response date, please contact me at 301-415-4053 or by e-mail at jgr@nrc.gov.

Sincerely,

/RA/

Jonathan Rowley, Project Manager
License Renewal Section A
License Renewal and Environmental Impacts Program
Division of Regulatory Improvement Programs
Office of Nuclear Reactor Regulation

Docket Nos.: 50-315 and 50-316

Enclosure: As stated

cc w/encl: See next page

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Donald C. Cook Nuclear Plant, Units 1 and 2

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DONALD C. COOK NUCLEAR PLANT, UNITS 1 AND 2
LICENSE RENEWAL APPLICATION
REQUEST FOR ADDITIONAL INFORMATION (RAI)

Donald C. Cook (CNP) LRA Section B.1.4, "Boric Acid Corrosion Prevention"

RAI B.1.4-1

License Renewal Application (LRA) Section B.1.4, "Boric Acid Corrosion Prevention," states that the scope of Boric Acid Corrosion Prevention Program will be revised to include electrical components in addition to ferritic steel. Identify all specific systems and components and their supports, inside and outside containment, that may be susceptible to boric acid corrosion/degradation. Provide information regarding provisions in this program for inspecting, detecting, or monitoring degradation of structures and components due to boric acid leakage and provisions for inspecting, detecting, or monitoring boric acid leakage in inaccessible locations and areas covered by external insulation surfaces.

RAI B.1.4-2

LRA Section B.1.4 states that Boric Acid Corrosion Prevention Program continues to be improved based on operating experience, and program revisions have incorporated lessons learned from condition reports and industry guidance. Provide information about these improvements as related to lessons learned from the Davis-Besse vessel head degradation and the control rod drive mechanism penetration cracking discussed in Bulletins 2001-01, 2002-01, 2002-02, and Order EA-03-009. Also, provide a discussion on implementation of corrective actions in the program to prevent the recurrence of degradation caused by boric acid leakage, as requested by GL 88-05.

CNP LRA Section B.1.26, "Reactor Vessel Integrity"

RAI B.1.26-1

The staff reviewed documents supporting LRA Section B.1.26, "Reactor Vessel Integrity," and found from the most recent capsule withdrawal schedule for Unit 1 documented in WCAP-12483, Revision 1, "Analysis of Capsule U from the American Electric Power Company D. C. Cook Unit 1 Reactor Vessel Radiation Surveillance Program," that Capsule W was formerly located at the 4° position and known as Capsule S and Capsule S was formerly known as Capsule W. Please confirm that the LRA has reported the most recent information regarding capsule identification. In addition, please provide the projected fluence in n/cm^2 and in EFPY relative to the fluence at the peak reactor pressure vessel (RPV) fluence location for Capsule W for Unit 1 and Capsule S for Unit 2 at the proposed time of their next withdrawal.

CNP LRA Section B.1.27, "Reactor Vessel Internals Plates, Forgings, Welds, and Bolting"

RAI B.1.27-1

Because of the limited information provided in LRA Section B.1.27, "Reactor Vessel Internals Plates, Forgings, Welds, and Bolting," the staff could not verify that this program is consistent with GALL for most of the 10 elements. For example, the LRA does not mention the identification of the most susceptible items, an Attribute 1 concern; the specific water chemistry guidelines used, an Attribute 2 concern; and whether enhanced visual VT-1 examinations or ultrasonic testing will be employed in inspections for certain selected components and locations, an Attribute 4 concern. Provide information regarding whether all 10 elements of the program are in accordance with GALL Program XI.M16, "PWR Vessel Internals," and whether your program contains any exceptions or enhancements.

RAI B.1.27-2

The information provided in LRA Section B.1.27 is insufficient for the staff to determine whether the PWR Materials Reliability Project (MRP) Issues Group and Westinghouse Owners Group (WOG) programs discussed there address all key issues of this aging management program (AMP), i.e., crack initiation and growth due to stress corrosion cracking (SCC) or irradiation-assisted SCC, loss of fracture toughness due to neutron irradiation embrittlement, and distortion due to void swelling. Provide a description of all the tasks under the MRP program and their goals and an assessment of the relevance of these tasks to the three aging effects mentioned above. Provide the same for the WOG program for baffle and former bolting. Further, please include your participation in the MRP program as a commitment in your LRA commitment list and in the UFSAR Supplement. Also, please provide a commitment that the program to manage void swelling will be submitted for staff review and approval three years prior to the period of extended operation.

CNP LRA Section B.1.5, "Bottom-Mounted Instrumentation Thimble Tube Inspection"

RAI B.1.5-1

LRA Section B.1.5, "Bottom-Mounted Instrumentation Thimble Tube Inspection," was designed for the detection of wear, not cracking due to SCC. However, in LRA Table 3.1.2-1 "cracking" was listed as an aging effect requiring management for bottom-mounted instrumentation (BMI) thimble tubes and bullet plugs. If SCC is a credible degradation mechanism requiring aging management for BMI thimble tubes, explain how your proposed program is adequate to detect SCC or modify the thimble tube inspection program to include inspections for thimble tube cracking due to SCC. As part of your response, please also address whether the eddy current (ET) examination discussed in the LRA has been qualified to detect and size SCC. Alternatively, information demonstrating that the thimble tubes are not susceptible to SCC and LRA Table 3.1.2-1 should be revised accordingly.

RAI B.1.5-2

LRA Section B.1.5 provides the acceptance criteria of BMI thimble tubes as: (1) replacement or isolation of a thimble tube with 80 percent through-wall wear, (2) reposition of a thimble tube

with more than 40 percent through-wall wear, provided that it is projected to remain under 80 percent until the next inspection, and (3) replacement, isolation, or reposition of a thimble tube with more than 40 percent through-wall wear if it is projected to exceed 80 percent by the next inspection. Using reposition as an option for Criterion 3 for a tube which is projected to exceed 80-percent wear by the next inspection is inadequate because the uncertainty of the tube wear rate at the selected location for the tube reposition in a certain time period might make the reposition ineffective. Provide a revision of the AMP by incorporating ET uncertainty in future wear measurements and by considering only replacement and isolation of tubes as options for Criterion 3 of the acceptance criteria.

RAI B.1.5-3

LRA B.1.5 states that ET inspections are scheduled to be performed every third refueling outage. Provide the basis for determination of this schedule using industry and plant-specific ET inspection data and considering the anticipated operating conditions during the period of extended operation. It should be noted that the proposed thimble inspection every third outage is only acceptable if no wear has been discovered in the past three refueling outages for all thimble tubes. When wear appears, the inspection interval must be reevaluated based on the observed thimble tube-specific wear rates. Please provide a revised inspection schedule, anticipating wear and based on severity of wear. The UFSAR Supplement should be revised to include a description of this inspection schedule. In addition, discuss any mitigative measures, such as flushing of the tubes, taken during refueling outages. If SCC is determined to be a potential degradation mechanism for thimble tubes in your response to RAI 3.0.3.3-1, provide justification for the inspection frequency for detecting the SCC flaws.

CNP LRA Section B.1.24, "Pressurizer Examinations"

RAI B.1.24-1

LRA Section B.1.24, "Pressurizer Examinations," assesses the cladding and attachment welds to the cladding of the pressurizer. Identify all nickel-alloy welds which were used to attach various penetrations to the pressurizer; confirm that these welds are managed by this AMP and justify that your proposed examinations for them are adequate in terms of the proposed frequency, inspection method, and scope for managing the degradation associated with this type of weld.

RAI B.1.24-2

The spray head and its associated components covered by LRA Section B.1.24 may be subject to severe thermal cycling. Inadequate justification was provided to demonstrate that a VT-3 examination is sufficient to detect a potential flaw in the spray head which could lead to failure of the component. Provide justification for using VT-3 examination instead of VT-1 examination for the one-time inspection of these components in either Unit 1 or Unit 2. In addition, provide information regarding acceptance criteria; the evaluation methodology for disposition of indications; and the need for successive examinations for the one-time inspection of spray head, spray head locking bar, and coupling. Also, please provide your commitment in the commitment list and in the UFSAR Supplement.

RAI B.1.24-3

LRA Section B.1.24 states that the volumetric inspections have been performed with inservice inspection techniques that have been proven effective within the industry at detecting cracking. Provide plant-specific and industry operating experience regarding detection, sizing, and disposition of cracking in the pressurizer cladding using volumetric examinations and cracking and loss of parts in spray head components using visual examinations consistent with the inspection discussed in LRA B1.24.

CNP LRA Section 3.1, "Reactor Vessel, Internals, and Reactor Coolant System"

RAI 3.1-8

For flaws in the RPV and control rod drive mechanism components listed in LRA Table 3.1.2-1 which have been detected and evaluated to date in accordance with ASME Code Section XI requirements, please propose a plan to monitor and evaluate these flaws during the period of extended operation because disposition of these detected flaws to date was based on a period of 40 years of operation. This plan should include monitoring and evaluating detected underclad flaws exceeding 0.3 inch in depth, the maximum initial flaw depth that was evaluated in WCAP-15338, "A Review of Cracking Associated with Weld Deposited Cladding in Operating PWR Plants."

RAI 3.1-9

For shell rings listed in LRA Table 3.1.2-1, Footnote 1 and Footnote 8 indicate that certain shell ring welds were fabricated using nickel-based weld material (e.g., Alloy 82/182, 52/152), and primary water stress corrosion cracking is a concern for these welds. Identify all locations under "shell rings"of Table 3.1.2-1 which have nickel-based weld material exposed to borated water environments.

RAI 3.1-10

The LRA Table B-1 indicates that you do not have an AMP similar to GALL Program XI.M3, "Reactor Head Closure Studs" for managing cracks, loss of material, and leakage associated with closure studs, nuts and washers, which are directly related to loss of mechanical closure integrity for these components. By crediting Inservice Inspection and Boric Acid Corrosion Prevention programs, as indicated in LRA Table 3.1.2-1, with the management of this aging effect for closure studs, nuts and washers, you have captured one of the two main elements of GALL Program XI.M3. However, please address the other main element of GALL Program XI.M3, i.e., discuss the preventive measures to mitigate cracking in these components. Preventive measures may include avoiding the use of metal-plated stud bolting to prevent degradation due to corrosion or hydrogen embrittlement and the use manganese phosphate or other acceptable surface treatments and stable lubricants (RG 1.65).

CNP LRA Section 4.2.1, "Charpy Upper-Shelf Energy"

RAI 4.2.1-1

LRA Section 4.2.1 states, "CNP's USE values were calculated using the methodology presented in Position 1." According to Position 1.2 (Position 1 according to the applicant's terminology) of Regulatory Guide 1.99, Revision 2, a copper composition of 0.056% and a fluence value of 1.475E+19 n/cm^2 for the beltline welds at a depth one-quarter of the RPV wall thickness for the Unit 2 RPV would give an upper-shell energy reduction of about 21%, not the 12% reported in the LRA and WCAP-13517, Rev 1, "Evaluation of Pressurized Thermal Shock for D. C. Cook Unit 2." Please clarify.