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September 21, 2007

AEP:NRC:7036-01
10 CFR 50.90

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Mail Stop O-P1-17
Washington, DC 20555-0001

SUBJECT: Donald C. Cook Nuclear Plant Units 1 and 2
Docket Nos. 50-315 and 50-316
Response to Requests for Additional Information re: License Amendment Request to
Revise Technical Specifications Associated with Generic Letter (GL) 2004-02

- References:**
1. Letter from J. N. Jensen, Indiana Michigan Power Company (I&M), to U. S. Nuclear Regulatory Commission (NRC) Document Control Desk, "License Amendment Request to Revise Technical Specifications Associated with Generic Letter (GL) 2004-02," AEP:NRC:7036, dated June 27, 2007, ADAMS Accession No. ML071910354.
 2. Electronic Mail from P. S. Tam, NRC, to J. R. Waters, M. K. Scarpello, and S. D. Simpson, I&M, "D. C. Cook - Draft RAI on Proposed Amendment re: Containment Sump (TAC Nos. MD5901, 2)," dated September 4, 2007, ADAMS Accession No. ML072480701.
 3. Electronic Mail from P. S. Tam, NRC, to J. R. Waters, M. K. Scarpello, and S. D. Simpson, I&M, "Additional Draft RAI Question re. Proposed Containment Sump Amendment (TAC Nos. MD5901, 2)," dated September 14, 2007, ADAMS Accession No. ML072570109.

Dear Sir or Madam:

By Reference 1, Indiana Michigan Power Company (I&M), the licensee for Donald C. Cook Nuclear Plant Units 1 and 2, proposed to amend Facility Operating Licenses DPR-58 and DPR-74. I&M proposed to revise Technical Specification (TS) 3.3.3, "Post Accident Monitoring (PAM) Instrumentation," to include new containment recirculation sump level instrumentation which will be used for indication of recirculation sump strainer blockage. Additionally, I&M proposed to revise TS 3.5.2, "ECCS - Operating," by replacing the term "trash racks and screens" with the more descriptive term, "strainers." Finally, I&M proposed to revise TS 3.6.14, "Containment

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Recirculation Drains,” to include Limiting Conditions for Operation, Actions, and Surveillance Requirements to ensure the operability of flow paths credited in analyses that are being performed to address the concerns identified in Generic Letter 2004-02.

By References 2 and 3, the U. S. Nuclear Regulatory Commission (NRC) requested additional information regarding the proposed amendment. This letter transmits I&M’s response to the NRC requests for additional information (RAIs).

Enclosure 1 to this letter provides an affirmation statement pertaining to the information contained in this letter and its enclosures. Enclosure 2 provides I&M’s response to the RAIs. This letter contains clarifying information and does not change the initial no significant hazards consideration determination documented in Reference 1.

This letter and its enclosures contain no new regulatory commitments. Copies of this letter and its enclosures are being transmitted to the Michigan Public Service Commission and Michigan Department of Environmental Quality, in accordance with the requirements of 10 CFR 50.91.

Should you have any questions, please contact Ms. Susan D. Simpson, Regulatory Affairs Manager, at (269) 466-2428.

Sincerely,

A handwritten signature in black ink, appearing to read 'JN', with a long horizontal line extending to the right.

Joseph N. Jensen
Site Vice President

Enclosures:

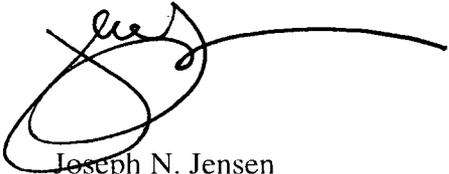
1. Affirmation
2. Response to Nuclear Regulatory Commission Request for Additional Information

c: J. L. Caldwell, NRC Region III
K. D. Curry, AEP Ft. Wayne, w/o enclosures
J. T. King, MPSC
MDEQ – WHMD/RPMWS
NRC Resident Inspector
P. S. Tam, NRC Washington, DC

AFFIRMATION

I, Joseph N. Jensen, being duly sworn, state that I am Site Vice President of Indiana Michigan Power Company (I&M), that I am authorized to sign and file this request with the Nuclear Regulatory Commission on behalf of I&M, and that the statements made and the matters set forth herein pertaining to I&M are true and correct to the best of my knowledge, information, and belief.

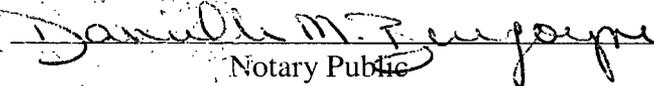
Indiana Michigan Power Company



Joseph N. Jensen
Site Vice President

SWORN TO AND SUBSCRIBED BEFORE ME

THIS 21 DAY OF September, 2007


Notary Public

My Commission Expires Apr. 4, 2008

Enclosure 2 to AEP:NRC:7036-01

Response to Nuclear Regulatory Commission Requests for Additional Information

Documents referenced in this enclosure are identified on page 6.

By Reference 1, Indiana Michigan Power Company (I&M), the licensee for Donald C. Cook Nuclear Plant (CNP) Units 1 and 2, proposed to amend Facility Operating Licenses DPR-58 and DPR-74. I&M proposed to revise Technical Specification (TS) 3.3.3, "Post Accident Monitoring (PAM) Instrumentation," to include new containment recirculation sump level instrumentation which will be used for indication of recirculation sump strainer blockage. Additionally, I&M proposed to revise TS 3.5.2, "ECCS – Operating," by replacing the term "trash racks and screens" with the more descriptive term, "strainers." Finally, I&M proposed to revise TS 3.6.14, "Containment Recirculation Drains," to include Limiting Conditions for Operation, Actions, and Surveillance Requirements to ensure the operability of flow paths credited in analyses that are being performed to address the concerns identified in Generic Letter (GL) 2004-02. By References 2 and 3, the U. S. Nuclear Regulatory Commission (NRC) requested additional information regarding the proposed amendment. This enclosure provides I&M's response to the NRC requests for additional information (RAIs). For clarity, the NRC questions have been assigned numbers corresponding to the sequence in which they were presented.

NRC Question 1

Your 90-day response to Generic letter 2004-02 (Attachment 1 Response to RAI 2(b) Item 4) states that debris interceptors will be installed on the approach area to the strainer section in the annulus and the area of the inlet nozzles for the containment wide range level instruments in addition to the drain paths from the CEQ fan rooms and the existing flow holes from the loop compartment to the annulus. Why is it not necessary to include the approach area to the strainer section in the annulus and the area of the inlet nozzles for the containment wide range level instruments in the technical specifications to ensure that the strainers are unobstructed and in good condition?

I&M Response to NRC Question 1

As described below, neither the debris interceptor in the annulus approach area to the remote strainer, nor the debris interceptors for the containment wide range level instruments, are credited in the analyses being performed to address the concerns identified in GL 2004-02.

The debris interceptor being installed in the annulus approach area to the remote strainer is an expanded metal type barrier, incorporating a safety gate that can be opened or locked to allow or prohibit personnel passage. This "debris interceptor/safety gate" will serve as a gross debris interceptor. The openings in the expanded metal are essentially diamond shaped, with nominal dimensions of 2.563 inches by 1 inch. These nominal openings, and the openings that will exist (typically less than 3 inches) around interferences (piping, cable trays, etc.), will continue to provide a substantial flow area even if a portion of the debris interceptor/safety gate becomes blocked by debris. This debris interceptor/safety gate will reduce the potential for large transient

(i.e., not break generated) debris from being transported to the remote strainers. The debris interceptor/safety gate will not affect the required flow to the remote strainer, and is not being credited in the debris transport analysis. The debris interceptor/safety gate can also be used to limit personnel access to the remote strainer area, minimizing the likelihood of inadvertent damage. Finally, the debris interceptor/safety gate can be used to preclude personnel access to areas of elevated radiation.

As stated in the response to NRC Question 3 below, the containment wide range level instruments are not related to the new recirculation sump water level switches that are proposed for inclusion in the TS by Reference 1. Neither the containment wide range level instruments nor the associated debris interceptors are credited in the analyses being performed to address the concerns identified in GL 2004-02. Although not credited in these analyses, the function of the containment wide range level instruments and the design of their debris interceptors are summarized below.

The containment wide range level instruments provide operators with secondary indication that sufficient water level is available in the containment to support transfer to the recirculation function of the emergency core cooling system (ECCS) and containment spray (CTS) system, and inform the operators when maximum containment water level has been reached. The containment wide range level instruments are thermal sensor type instruments, which indicate level as the resistance of the sensing element changes. The instruments are located inside a stillwell consisting of a 1 1/2-inch vertical pipe with a 1-inch opening at the lower end. The 1-inch opening is approximately 5 inches above the containment floor. The debris interceptor is a box constructed of steel plate with nominal 1/2-inch perforations, and encloses the 1-inch opening. Since the flow rate into the stillwell needed to provide level indication is very small, and the expected debris that could be swept across the floor is primarily reflective metallic insulation, it is unlikely that debris would render the instruments non-functional even if the debris interceptors were not installed.

NRC Question 2

Section 3.1 of your application discusses addition of new post-accident monitoring instrumentation to the Technical Specification Table 3.3.3-1 to add a new function "Containment Recirculation Sump Water Level." Section 4.1 of the application notes the need for such instrumentation derives from Regulatory Guide 1.97 when there is a need for operators to take specified manual actions for which no automatic control is provided and that are required for the safety system to accomplish its safety function. Section 4.1 further notes that the level setting provides advance warning of potential air entrainment due to vortexing; which is more limiting for the Cook ECCS and CTS pumps than the loss of net positive suction head.

(a) Describe the limiting level which these instruments protect against vortexing, including margins in level related to time for the operator to take actions.

I&M Response to NRC Question 2(a)

A computational fluid dynamics analysis indicates that the onset of surface swirl indications (which would precede vortex formation) would not occur until water level in the plenum behind the sump screen (where the new recirculation sump water level instruments are located) dropped below elevation 601 feet 6 inches. The setpoint for the new level instruments has been established at elevation 601 feet 9 inches. This setpoint is conservative in that the vortex analysis did not consider various recirculation sump features that would inhibit vortex formation. Additionally, I&M estimates that actual air entrainment in the ECCS or CTS pump would not occur to a significant extent until there was less than approximately 1 foot of water in the 6-inch diameter sump vent pipe. This would be equivalent to a water level inside the sump of approximately 597 feet 9 inches, which is well below the setpoint established for the new level switches.

At the time of switchover to the recirculation mode of ECCS and CTS operation, approximately 20 minutes following a large break loss-of-coolant accident, the containment water level would be approximately elevation 606 feet 6 inches. At slightly more than 9 hours after the accident, the minimum containment water level, elevation 604 feet 8 inches, would occur. At this level, a head loss across the strainer of approximately 3 feet 2 inches would actuate the new level switches. Previous strainer testing and in-progress strainer testing indicate that operators would have adequate time to respond to actuation of the new level switches. Testing is not yet complete, but it is expected the time between level switch actuation and onset of conditions that could challenge air entrainment limits would be on the order of several hours. Additionally, the testing may demonstrate that condition would not be reached. I&M estimates that, at a minimum, operator action would not be needed for at least 30 minutes. Operators would therefore have a significant amount of time to recognize and respond to the conditions that may lead to vortexing. I&M anticipates that these conclusions will be further validated by testing that is expected to complete within the next few weeks.

(b) Describe the "specified manual actions" that the operator will take upon actuation of this level alarm provided by the instruments, including how these actions maintain the safety functions of the CNP ECCS and CTS pumps.

I&M Response to NRC Question 2(b)

I&M plans to implement operations procedures for responding to actuation of the alarm provided by the new recirculation sump water level switches as part of the implementation of the licensing basis changes that will be documented by I&M's revised response to GL 2004-02. Consistent with the NRC guidance provided in Reference 4, submittal of the revised response is scheduled to occur no later than December 31, 2007. I&M anticipates that these procedures will provide direction that, upon actuation of the alarm provided by the new recirculation sump water level switches, operators are to reduce flow by securing an ECCS or CTS pump, wait a specified period of time to allow the alarm condition to clear, and if the alarm does not clear, secure an

additional pump while ensuring core and containment cooling are maintained. During the time that there is an alarm condition on the sump level instrument, the procedures will direct the operators to monitor residual heat removal (RHR) system flow rates, and RHR and CTS motor amps for indications of abnormal oscillations which could be indicative of air ingestion.

Although it is not expected that numerous flow reductions would be necessary, the procedures will provide guidance for continued sequential securing of pumps, up to and including stopping and then restarting the last operating core cooling pump, which would be an RHR pump. The CNP analysis of record assumes that a single train of ECCS and CTS is available for mitigation of a loss of coolant accident. Therefore, stopping the last remaining core cooling pump is currently assumed to be a beyond design basis event. However procedural direction to stop the last remaining core cooling pump will be retained for a beyond design and licensing basis condition of excessive strainer blockage.

NRC Question 3

Specify if the two new recirculation sump level instruments (NLI-300 and NLI-301) are replacements or additions to the containment recirculation sump water level instrumentation included in your commitment to Regulatory Guide (RG) 1.97 dated October 15, 1988. If they are replacements, then specify the differences between the new and the old instruments.

I&M Response to NRC Question 3

The two new recirculation sump level instruments are in addition to the existing containment recirculation sump water level instruments, which are located outside the recirculation sump. The new instruments are located inside the recirculation sump enclosure.

NRC Question 4

Provide the range of the new instrumentation and confirm that each Type A criteria of RG 1.97 is met.

I&M Response to NRC Question 4

The new recirculation sump level instruments are fixed position float switches that would have to be remounted to change their setpoint. Once mounted, they do not have a range of indication. The level switches monitor a Type A variable and are fully qualified to Category 1 requirements in accordance with NRC Regulatory Guide 1.97, Revision 3, May 1983.

NRC Question 5

Provide the basis for removal of the existing trash rack function with regards to qualification of the replacement strainer for missiles, jet impingement, and pipe whip. Provide the basis for qualification for the strainers for the maximum expected differential pressure (head loss) that could exist.

I&M Response to NRC Question 5

The trash racks and screens are being replaced with pocket-style strainers designed and fabricated by Control Components Incorporated (CCI). The pocket-style strainers integrate the trash rack and screen functions, with the reinforced face of the strainer functioning as a trash rack. The junction of the strainer pocket with the strainer face provides a robust barrier to prevent damage to the pocket sections in the event that large pieces of accident-generated debris are transported to the strainer. The most significant of these debris pieces would be portions of reflective metallic insulation dislodged during the postulated high energy line break. This material is thin gage stainless steel sheet that would not damage the face of the pocket strainer. Additionally, the strainers have been designed, and qualified via vendor analysis, to withstand the differential pressure resulting from complete blockage at the predicted maximum containment water level following an accident. The maximum strainer differential pressure under these conditions would be 15.1 feet of water. This is based on a predicted maximum containment water level slightly below elevation 614 feet, and the elevation of the curb at the base of the pockets (inside the strainer), approximately 599 feet.

One of the design criteria for structures, systems, and components within containment is that their failure cannot result in generation of missiles that could potentially impact required safety-related equipment. Potential missiles resulting from ejection of a control rod drive mechanism from the top of the reactor vessel is a special case specifically addressed in the CNP Updated Final Safety Analysis Report. This event would occur in a section of containment for which a missile shield is provided and is significantly separated from the location of the proposed recirculation sump strainers.

The modifications include evaluations of the potential for damage to the strainers from direct jet impingement or pipe whip due to breaks in branch lines connected to the main coolant loop piping. The evaluations demonstrate that there would be no impacts to the strainers from direct jet impingement and pipe whip for main coolant loop branch connections or other high energy line breaks inside containment. By Reference 5, the NRC approved exclusion of the main coolant loop piping from direct jet impingement or pipe whip considerations based on a leak-before-break analysis. Therefore, direct jet impingement and pipe whip from breaks in the loop piping need not be considered with respect to the strainers.

References

1. Letter from J. N. Jensen, I&M, to NRC Document Control Desk, "License Amendment Request to Revise Technical Specifications Associated with Generic Letter (GL) 2004-02," AEP:NRC:7036, dated June 27, 2007, ADAMS Accession No. ML071910354.
2. Electronic Mail from P. S. Tam, NRC, to J. R. Waters, M. K. Scarpello, and S. D. Simpson, I&M, "D. C. Cook - Draft RAI on Proposed Amendment re: Containment Sump (TAC Nos. MD5901, 2)," dated September 4, 2007, ADAMS Accession No. ML072480701.
3. Electronic Mail from P. S. Tam, NRC, to J. R. Waters, M. K. Scarpello, and S. D. Simpson, I&M, "Additional Draft RAI Question re: Proposed Containment Sump Amendment (TAC Nos. MD5901, 2)," dated September 14, 2007, ADAMS Accession No. ML072570109.
4. Letter from J. A. Grobe, NRC, to A. R. Pietrangelo, Nuclear Energy Institute, "Nuclear Regulatory Commission Request for Additional Information to Pressurized Water Reactor Licensees Regarding Responses to Generic Letter 2004-02," dated November 14, 2006, ADAMS Accession No. ML063110263.
5. Letter from S. A. Varga, NRC, to J. Dolan, I&M, dated November 22, 1985, ADAMS Accession No ML021010521.