



**INDIANA  
MICHIGAN  
POWER®**

A unit of American Electric Power

**Indiana Michigan Power**  
Cook Nuclear Plant  
One Cook Place  
Bridgman, MI 49106  
AEP.com

June 2, 2006

AEP:NRC:6055-06  
10 CFR 50.55a

Docket Nos.: 50-315  
50-316

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

Donald C. Cook Nuclear Plant Units 1 and 2  
FOURTH 10-YEAR INTERVAL PUMP AND VALVE INSERVICE TESTING PROGRAM  
REQUEST FOR ADDITIONAL INFORMATION  
(TAC NOS. MC9455 AND MC9456)

- References:
1. Letter from Daniel P. Fadel, Indiana Michigan Power Company (I&M), to Nuclear Regulatory Commission (NRC), "Donald C. Cook Nuclear Plant Units 1 and 2, Fourth 10-Year Interval Pump and Valve Inservice Testing Program," AEP:NRC:5055-14, Accession Number ML060060110, dated December 28, 2005.
  2. Communication from Peter Tam, NRC, to M. K. Scarpello, et. al., I&M, "Cook - Draft RAI on Pump and Valve Relief Requests (TAC MC9455 and MC9456)," Accession Number ML060590089, dated February 27, 2006.

Reference 1 transmitted Indiana Michigan Power Company's (I&M's) Fourth 10-Year Interval Pump and Valve Inservice Testing (IST) Program for Donald C. Cook Nuclear Plant (CNP) Units 1 and 2. Included in the CNP IST program were the relief requests and proposed alternatives (collectively referred to as relief requests) that I&M intends to implement during the Fourth 10-Year IST Interval.

Reference 2 transmitted the Nuclear Regulatory Commission's (NRC's) Request for Additional Information (RAI) regarding I&M's relief requests. I&M and NRC personnel discussed the RAI during a March 21, 2006, telephone conference. Per the discussion during the telephone conference, I&M is withdrawing Relief Request REL-001, and revising Relief Request REL-PP3 by deleting the residual heat removal pump suction pressure gauge from the request. Additionally, REL-PP3 was revised by adding the use of the discharge pressure gauge for the Comprehensive Test, and by making a clarification to the flow instrument ranges.

A047

The response to the RAI, as clarified during the March 21, 2006, telephone conference, is provided in Attachment 1 to this letter.

This letter contains no new commitments. Should you have any questions, please contact Mr. Michael K. Scarpello, Regulatory Affairs Supervisor, at (269) 466-2649.

Sincerely,



Joseph N. Jensen  
Site Support Services Vice President

RGV/rdw

- Attachments:
1. Fourth 10-Year Interval Pump and Valve Inservice Testing Program, Response to Request for Additional Information
  2. Schematic, Emergency Core Cooling System – Recirculation Phase
  3. 10 CFR 50.55a Relief Request – REL-PP3, Proposed Alternative in Accordance with 10 CFR 50.55a(a)(3)(i)

- c:
- R. Aben – Department of Labor and Economic Growth
  - J. L. Caldwell – NRC Region III
  - K. D. Curry – AEP Ft. Wayne, w/o attachments
  - J. T. King – MPSC, w/o attachments
  - MDEQ – WHMD/RPMWS, w/o attachments
  - NRC Resident Inspector
  - P. S. Tam – NRC Washington, DC

Attachment 1 to AEP:NRC:6055-06

Fourth 10-Year Interval Pump and Valve Inservice Testing Program  
Response to Request for Additional Information

Reference 1 transmitted Indiana Michigan Power Company's (I&M's) Fourth 10-Year Interval Pump and Valve Inservice Testing (IST) Program for Donald C. Cook Nuclear Plant (CNP) Units 1 and 2. Included in the CNP IST program were the relief requests and proposed alternatives (collectively referred to as relief requests) that I&M intends to implement during the Fourth 10-Year IST Interval.

Reference 2 transmitted the Nuclear Regulatory Commission's (NRC's) Request for Additional Information (RAI) regarding I&M's relief requests. I&M and NRC personnel discussed the RAI during a March 21, 2006, telephone conference. The response to the RAI, as clarified during the March 21, 2006, telephone conference, is provided below.

**NRC Request Number 1**

*Relief request REL-001*

*ISTC-3560 requires valves with fail-safe-actuators to be tested by observing the operation of the actuator upon loss of valve actuating power in accordance with the exercising frequency of ISTC-3510. Please provide information as to why fail-safe testing of these valves during a refueling outage as required by the ASME Code is impractical.*

**I&M Response to 1**

As discussed in the March 21, 2006, telephone conference, I&M is withdrawing this request.

**NRC Request Number 2**

*Relief Request REL-002*

*The basis for relief identifies an NRC document titled "Summary of October 9, 1997, Meeting on [Refueling Water Storage Tank] RWST Mini-Flow Recirculation Line Valve Testing." This document describes an agreement in which it would be appropriate that the valves be added to the licensee's inservice test program as Category B valves. As Category B valves, the Code does not require individual valve leakage testing. For Category B valves, the only requirement is for closure exercising and system leakage testing. Under those circumstances, the reverse flow testing is acceptable. Please provide information as to the change to the valve categorization back to category A, and how reverse testing is an acceptable alternative.*

## **I&M Response to 2**

These valves were reclassified as Category A valves (valves requiring a seat-leakage test) based on the concern raised in Information Notice 91-56, "Potential Radioactive Leakage to Tank Vented to Atmosphere," and reevaluation of the category definitions. Originally, the valves were categorized as Category B valves. Category B valves are valves that require full stroke exercising but whose "... seat leakage in the closed position is inconsequential for fulfillment of their required function(s). . . ." I&M has determined that these valves, because they have a seat leakage requirement, should be categorized as Category A valves. The Category A classification requires that the valves be leak tested in accordance with the code requirements.

CNP Units 1 and 2 were constructed and licensed prior to the concern about back-leakage to the RWST being identified. As a result, the system in which these valves are located is not designed and constructed to allow accident-direction testing. Accident-direction testing is where the pressure differential exists in the same direction as when the valve is performing its isolation function. There are no isolation valves between these valves and the RWST. The Attachment 2 schematic reflects the plant configuration and is included for illustrative purposes. As can be seen, there is not a practical means to measure seat leakage with pressure applied in the accident direction. Attempting to quantify leakage through these valves by monitoring the RWST level is not an accurate means of measuring seat leakage. Additionally, system configuration does not allow leakage determination by using the "test-volume makeup" method. This method also would not yield accurate results.

The valves are 8-inch, 150-pound flex wedge gate valves. The seat seal for these valves is created by a combination of internal pressure and mechanical wedging force. At line pressures under approximately 100 pounds per square inch (psi), the pressure force alone is not sufficient to create a seal, and the mechanical force resulting from the disc being wedged between the seat rings provides the additional force necessary to provide a seal. Testing these valves in the reverse direction tests the valves' leak tightness when the line pressure is below 100 psi, and provides evidence of any leakage past the valves.

As can be seen in the Attachment 2 system schematic, valve IMO-261 is in series with check valve SI-101, and valves IMO-910 and IMO-911 are in series with check valve SI-185. The check valves are Category A valves and are leak tested in compliance with the code, providing additional assurance that the back leakage to the RWST from these flow paths will meet the system requirements.

It is I&M's opinion that the proposed leak testing of the gate valves, combined with the leakage testing of the check valves in series with them, provides reasonable assurance that the system leakage requirements will be met under accident conditions.

**NRC Request Number 3***Relief Request REL-PP2*

*NUREG-1482, Revision 1, Section 5.4 discusses Monitoring Pump Vibration in accordance with ISTB. The basis section discusses the speed range to be evaluated. Instruments with a frequency response that meets these requirements for slow-speed pumps may not be widely used. However, the unavailability of instruments alone does not constitute adequate justification for obtaining relief or approval of an alternative; however it may be a significant element in the justification. The NRC has observed that because of technology advancement and research in the field of instrumentation and vibration measuring transducers, meeting code requirements can now be procured from various suppliers at reasonable costs. Please provide a discussion as to the availability of instruments to measure the lower frequency necessary to meet the code requirements.*

**I&M Response to 3**

Per the March 21, 2006, telephone conference, no further information is required.

**NRC Request Number 4***Relief Request REL- PP3*

*The reference used in this Request for Relief, NUREG-1482, Revision 1, Section 5.5.1 discusses the range and accuracy of analog instruments. The basis describes the justification for using originally installed gauges with instrument ranges of 4 times the reference value. Please provide a basis for using the 0-600 psig gauge to establish the reference value for suction pressure of the Residual Heat Removal Pumps (lowest reference value (23.2 psi). Additionally, provide a discussion on the feasibility of using temporary gauges for these pressure test gauges.*

**I&M Response to 4**

I&M has revised the request by deleting the residual heat removal pump suction pressure gauges from the request. Additionally, the use of the discharge pressure gauge for the Comprehensive Test was added, and a clarification was made to the flow instrument ranges. The revised relief request is provided in Attachment 3.

**References**

1. Letter from Daniel P. Fadel, I&M, to NRC, "Donald C. Cook Nuclear Plant Units 1 and 2, Fourth 10-Year Interval Pump and Valve Inservice Testing Program," AEP:NRC:5055-14, Accession Number ML060060110, dated December 28, 2005.
2. Communication from Peter Tam, NRC, to M. K. Scarpello, et. al., I&M, "Cook – Draft RAI on Pump and Valve Relief Requests (TAC MC9455 and MC9456)," Accession Number ML060590089, dated February 27, 2006.

Attachment 2 to AEP:NRC:6055-06

**SCHEMATIC  
EMERGENCY CORE COOLING SYSTEM – RECIRCULATION PHASE**



Attachment 3 to AEP:NRC: 6055-06

10 CFR 50.55a Relief Request - REL-PP3  
Proposed Alternative  
in Accordance with 10 CFR 50.55a(a)(3)(i)

1.0 ASME Code Components Affected

ASME Code Class 2 Residual Heat Removal (RHR) System Pumps:

- 1-PP-35E, East RHR Pump
- 1-PP-35W, West RHR Pump
- 2-PP-35E, East RHR Pump
- 2-PP-35W, West RHR Pump

2.0 Applicable Code Edition and Addenda

ASME OM Code-2001 Edition including Addenda through OMB-2003.

3.0 Applicable Code Requirement

OM Code ISTB-3510(b)(1), "The full-scale range of each analog instrument shall be not greater than three times the reference value."

4.0 Reason for Request

The range of analog discharge pressure test gauges (M&TE gauges) used during the performance of RHR pump surveillance testing during unit shutdowns does not meet the range limitation imposed by ISTB-3510(b)(1) in that the instrument range exceeds the respective reference value by greater than a factor of three. The maximum acceptable gauge range in accordance with ISTB-3510(b)(1) would be 0-500 pounds per square inch gauge (psig) (lowest reference value - 174 psig). The full scale accuracy for the code allowed gauge range is plus or minus (+/-) 2 percent (%) or 10.0 psig for the Group A Test (+/- 0.5% or 2.5 psig for the Comprehensive Test). The M&TE gauge used has a range of 0-600 psig and is calibrated to a full scale accuracy of 0.1% or 0.6 psig.

The combination of the range and accuracy of the 0-600 psig M&TE gauge yields a reading more accurate than the readings achieved from an instrument that meets the requirements as stated in ISTB-3510(b)(1) for the Group A Test and the Comprehensive Test.

The range of the installed analog flow instrument used during the performance of RHR pump surveillance testing does not meet the range limitation imposed by ISTB-3510(b)(1) in that the instrument range exceeds the respective reference value by greater than a factor of three during testing on minimum flow. The installed Unit 1 gauge

has a range of 0-1500 gallons per minute (gpm) and is calibrated to a full scale accuracy of 1.0% or 15 gpm. The installed Unit 2 gauge has a range of 0-1700 gpm and is calibrated to a full scale accuracy of 1.0% or 17gpm. The full scale accuracy of the Code allowed gauge is +/- 2% or 22.5 gpm when evaluated against the RHR pump minimum operating point of 375 gpm with an allowed maximum gauge range of 1125 gpm.

The combination of the range and accuracy of the installed flow gauges yields a reading more accurate than the readings achieved from the instruments that meet the requirements as stated in ISTB-3510(b)(1) for the Group A Test.

#### 5.0 Proposed Alternative and Basis for Use

RHR pump discharge pressures will be measured via available M&TE gauges meeting the alternate requirements, as identified in the Reason for Request, of a range of 0-600 psig and calibrated to a full scale accuracy of 0.1% or 0.6 psig for the Group A and Comprehensive Tests.

RHR pump flow will be measured via the installed 0-1500 gpm (Unit 1) and the installed 0-1700 gpm (Unit 2) flow instruments calibrated to a full scale accuracy of 1.0% for the Group A Test.

As noted earlier, the combination of range and accuracy yields a reading at least equivalent to the reading achieved from instruments that meet the Code requirements, and, per the guidance provided in the reference document, provides an acceptable level of quality and safety.

#### 6.0 Duration of Proposed Alternative

This Relief Request, upon approval, will be applied to the CNP Fourth 10-Year Inservice Test Interval.

#### 7.0 Reference

NUREG 1482 Revision 1, section 5.5.1