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AEP:NRC:6055-04
10 CFR 50.55a

Docket No.: 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 Unit 2
PROPOSED ALTERNATIVE TO
AMERICAN SOCIETY OF MECHANICAL ENGINEERS CODE FOR
IN-SERVICE TEST REQUIREMENTS
(TAC NOS. MD0247 and MD0248)

Reference: Letter from J. N. Jensen, Indiana Michigan Power Company (I&M), to U. S. Nuclear Regulatory Commission (NRC), Document Control Desk, "Proposed Use of Portion of Subsequent American Society of Mechanical Engineers Code Edition for In-Service Test Requirements (TAC NOS. MD0247 and MD0248)," dated March 3, 2006.

The provisions of 10 CFR 50.55a(a)(3)(ii) allow licensees to request NRC approval of alternatives to inservice testing (IST) requirements contained in codes and standards if compliance with the requirements would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety. Pursuant to 10 CFR 50.55a(a)(3)(ii), I&M requests NRC approval of a proposed alternative to the requirements in American Society of Mechanical Engineers (ASME)/American National Standards Institute (ANSI) OM-1987, OMa-1988 Addenda, for IST of the Unit 2 West Essential Service Water (ESW) pump for the Donald C. Cook Nuclear Plant (CNP). I&M is proposing to conduct IST program testing of the Unit 2 West ESW pump at a nominal 3-month testing frequency in lieu of the double frequency testing specified by the first sentence of ASME/ANSI OM-1987, OMa-1988 Addenda, Part 6, Paragraph 6.1. The proposed alternative would apply from the date of the most recent pump IST program test to the end of the nominal 3-month period. This request supersedes the request transmitted by the referenced letter.

I&M requests approval of the proposed alternative by March 17, 2006. Approval by this date will allow I&M to perform the next required test of the Unit 2 West ESW pump after Unit 2 has been shut down for a scheduled refueling outage. As described in the attachment to this letter, IST program full flow testing of the Unit 2 West ESW pump may cause instability in the Unit 2 Reactor Coolant Pump (RCP) 1 seal leak-off flow. This RCP seal leak-off flow has been exhibiting

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instability in response to temperature changes in the component cooling water (CCW) system, which affects the temperature of the seal injection water. Although controls have been implemented that have been successful at managing seal performance, full flow testing of the Unit 2 West ESW pump would result in significant temperature changes in the CCW system. These temperature changes could result in additional instances of RCP seal leak-off flow instability. Should the seal instabilities become excessive, a unit shutdown may be required. I&M intends to correct the seal leak-off instability during the refueling outage. The Unit 2 refueling outage is scheduled to start March 25, 2006.

The attachment to this letter provides I&M's request for NRC approval of a proposed alternative. This letter contains no new regulatory commitments. Should you have any questions, please contact Mr. Michael K. Scarpello, Regulatory Affairs Supervisor, at (269) 466-2649.

Sincerely

Joseph N. Jensen
Site Vice President

JRW/jen

Attachment: 10 CFR 50.55a Relief Request REL-PP6

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

Attachment to AEP:NRC:6055-04

10 CFR 50.55a Relief Request REL-PP6

Proposed Alternative in Accordance with 10 CFR 50.55a(a)(3)(ii)
Hardship or Unusual Difficulty Without Compensating Increase in Level of Quality or Safety

1. ASME Components Affected

The affected component is the Unit 2 West Essential Service Water (ESW) pump (2-PP-7W). Although this pump is not an ASME Code class pump, it is treated as ASME Code Class 3.

2. Applicable Code Edition and Addenda

ASME/ANSI OM-1987, OMa-1988 Addenda.

3. Applicable Code Requirement

ASME/ANSI OM-1987, OMa-1988 Addenda, Part 6, Paragraph 6.1, "Acceptance Criteria," first sentence states:

> If deviations fall within the alert range of Table 3, the frequency of testing specified in para. 5.1 shall be doubled until the cause of the deviation is determined and the condition corrected.

ASME/ANSI OM-1987, OMa-1988 Addenda, Part 6, Paragraph 5.1, "Frequency of Inservice Tests," states:

> An inservice test shall be run on each pump nominally every 3 months....

4. Reason for Request

As described below, I&M is requesting approval of the proposed alternative to preclude the risk of a unit transient or shutdown due to temperature changes on the Unit 2 Reactor Coolant Pump (RCP) 1 seal resulting from a full flow IST program test of the Unit 2 West ESW pump.

Donald C. Cook Nuclear Plant (CNP) has a licensing basis minimum leak-off flow rate for the RCP seals. This minimum flow is based on ensuring seal integrity, as well as preventing the unanalyzed condition of two-phase flow in the downstream leak-off piping. Until January 20, 2006, the seal leak-off flow rate for Unit 2 RCP 1 was stable and above the minimum limits, although slightly lower than that of the other three pumps. On January 20, 2006, the Unit 2 RCP 1 seal leak-off flow rate exhibited a period of instability. Initial analysis indicates the instability was initiated by a series of injection water pressure

and temperature changes caused by multiple charging pump starts and stops. As a result of this occurrence, actions were initiated to maintain the seal leak-off flow rate stable, and provide contingency actions that might be taken if the instability recurred. The actions to maintain the seal leak-off flow rate stable have proven to be effective at normal ESW system flow rates. However, procedures instruct operators to shut down the reactor if instabilities result in a sustained low seal leak-off flow.

On February 21, 2006, a containment isolation valve surveillance test resulted in changes to non-essential service water (NESW) flow to air coolers in the vicinity of Unit 2 RCP 1. Although not expected, the resultant fluctuations in air temperature apparently caused a recurrence of instability in Unit 2 RCP 1 seal leak-off flow. Based on the investigation of this occurrence, there appears to be a significant dependence and sensitivity between temperature changes (of both seal water and containment air temperature) and the onset of seal leak-off flow instabilities. This dependence and sensitivity is evidenced by the seal leak-off flow transients observed when there are changes in the ESW and NESW temperature due to changes in the temperature of the CNP ultimate heat sink, Lake Michigan.

Accordingly, upcoming plant evolutions were reviewed to identify those activities affecting any parameter that could impact the Unit 2 RCP 1 seal. These evolutions included the increased frequency IST vibration measurement of the Unit 2 West ESW pump, which is currently in Alert status. The IST measurements must be taken at elevated ESW flow (full flow reference conditions), which would result in decreased component cooling water temperature, thereby reducing the Unit 2 RCP 1 seal water injection temperature. Since the Unit 2 West ESW pump is in an Alert status, ASME/ANSI OM-1987, OMa-1988 Addenda, Part 6, Paragraph 6.1, requires that the pump be tested at twice the normal 3-month frequency. Including the 25 percent allowance provided by Technical Specification (TS) 5.5.6 and TS SR 3.0.2, the Unit 2 West ESW pump IST surveillance has an absolute limit of March 21, 2006. The Unit 2 refueling outage is scheduled to start March 25, 2006. I&M intends to correct the Unit 2 RCP 1 seal leak-off instability condition during the outage. Therefore, NRC approval of the proposed alternative will preclude the risk of a unit transient or shutdown due to temperature changes on the Unit 2 RCP 1 seal injection water resulting from the IST program test. I&M considers that such a risk constitutes hardship or unusual difficulty.

5. Proposed Alternative and Basis for Use

Proposed Alternative

I&M is proposing to conduct IST program testing of the Unit 2 West ESW pump at the 3-month testing frequency specified by ASME/ANSI OM-1987, OMa-1988 Addenda, Part 6, Paragraph 5.1, in lieu of the double frequency specified by the first sentence of ASME/ANSI OM-1987, OMa-1988 Addenda, Part 6, Paragraph 6.1. For the duration of the proposed alternative, the Unit 2 West ESW pump vibration will be monitored weekly, via a predictive

maintenance vibration monitoring program, when the pump is in service operating at normal flow.

Basis for Use

As described below, there is reasonable assurance that the Unit 2 West ESW pump will continue to be operationally ready during the period that the proposed alternative is in effect.

The current Unit 2 West ESW pump bowl assembly, including the rotating element, was installed in October 2004. Based on the first subsequent full flow IST program test, a new set of vibration reference values was established. Following that test, temporary changes were made to the configuration of the forebay from which the ESW system takes suction. During these changes, pump vibration readings taken at four of the five measurement locations, while the pump was at normal operating flow, were observed to be above the IST Alert Limit. Note that the IST limits are based on full flow conditions. The pump was placed on an increased frequency IST program testing schedule. Although ASME/ANSI OM-1987, OMa-1988 Addenda, Part 6, Paragraph 6.1, requires that the increased testing frequency be twice the quarterly frequency, i.e., every 46 days, I&M conservatively performed increased frequency IST program testing of the Unit 2 West ESW pump on a monthly basis. Subsequent to the bowl assembly replacement, the monthly vibration readings for one location have fluctuated around the Alert Limit (0.152 in/sec.) with no increasing or decreasing trend evident. The readings at this location have exceeded the Alert Limit four times. The highest of these four readings was 0.195 in/sec. For reference, the Action Limit is 0.366 in/sec. The most recent Unit 2 West ESW pump IST program test was conducted January 23, 2006.

In addition to IST program required testing, the Unit 2 West ESW pump vibration has been monitored weekly, via a predictive maintenance vibration monitoring program, since October 2004 when the elevated vibration levels described above were noted. The weekly monitoring is performed when the pump is in service, operating at normal flow. The weekly monitoring includes trending of overall vibration levels, spectral analysis, and time waveform analysis. In addition, underwater accelerometer vibration data from accelerometers installed on the ESW pump bowls is collected and analyzed. The weekly monitoring has shown no adverse trends. This weekly monitoring will continue for the duration of the proposed alternative.

I&M considers the above described monitoring results to be indicative of stable performance, such that there is reasonable assurance that the Unit 2 West ESW pump will continue to be operationally ready. Additionally, weekly vibration monitoring in accordance with the predictive maintenance vibration monitoring program during the period that the proposed alternative is in effect will provide an ongoing indication of pump health. Therefore, the hardship or unusual difficulty described in Section 4 above would not result in a compensating increase in the level of quality and safety.

6. Duration of Proposed Alternative

The proposed alternative would apply to the Unit 2 West ESW pump from the date of the most recent Unit 2 West ESW pump IST program test, January 23, 2006, for a period of 92 days plus the 25 percent allowance permitted by TS 5.5.6 and TS SR 3.0.2.