



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

June 2, 2021

Mr. Joel P. Gebbie
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, UNITS 1 AND 2 – ALTERNATIVE
REQUEST REL-PP2 RELATED TO FIFTH 10-YEAR INSERVICE TESTING
PROGRAM INTERVAL (EPID L-2020-LLR-0119)

Dear Mr. Gebbie:

By letter dated October 5, 2020 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML20290A500), and supplemented by a letter dated February 25, 2021 (ADAMS Accession No. ML21063A251), Indiana Michigan Power Company (I&M or licensee), submitted REL-PP2, to the U.S. Nuclear Regulatory Commission (NRC) for the use of an alternative to certain inservice testing (IST) program requirements of the American Society of Mechanical Engineers (ASME) *Code for Operation and Maintenance of Nuclear Power Plants* (OM Code), at Donald C. Cook Nuclear Power Plant, Units 1 and 2 (CNP).

Specifically, pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR) 50.55a(z)(1), the licensee requested to use proposed alternative REL-PP2. The NRC staff reviewed the licensee's submittal and determined that the proposed alternative REL-PP2 provides an acceptable level of quality and safety for the pumps at CNP. Accordingly, the NRC staff concludes that the licensee has adequately addressed the regulatory requirements set forth in 10 CFR 50.55a(z)(1). Therefore, the NRC staff authorizes the use of alternate REL-PP2 for the Fifth 10-Year IST Program interval at CNP, scheduled to end on June 30, 2026.

All other ASME OM Code requirements which are not modified by the staff's approval of the licensee's request remain applicable, including third-party review by the Authorized Nuclear Inservice Inspector.

Enclosed is the NRC staff's safety evaluation.

If you have any questions, please contact Scott P. Wall, at 301-415-2855 or via e-mail at Scott.Wall@nrc.gov.

Sincerely,

Nancy L. Salgado, Chief
Plant Licensing Branch III
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos. 50-315 and 50-316

cc: Listserv



UNITED STATES
NUCLEAR REGULATORY COMMISSION
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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

PROPOSED ALTERNATIVE REQUEST REL-PP2

FIFTH 10-YEAR INTERVAL INSERVICE TESTING INTERVAL

INDIANA MICHIGAN POWER COMPANY

DONALD C. COOK NUCLEAR PLANT, UNIT NOS. 1 AND 2

DOCKET NOS. 50 315 AND 50 316

1.0 INTRODUCTION

By letter dated October 5, 2020 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML20290A500), and supplemented by a letter dated February 25, 2021 (ADAMS Accession No. ML21063A251), Indiana Michigan Power Company (I&M or licensee), submitted REL-PP2, to the U.S. Nuclear Regulatory Commission (NRC) for the use of an alternative to certain inservice testing (IST) program requirements of the American Society of Mechanical Engineers (ASME) *Code for Operation and Maintenance of Nuclear Power Plants* (OM Code), at Donald C. Cook Nuclear Power Plant, Units 1 and 2 (CNP).

Specifically, pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR) 50.55a(z)(1), the licensee requested to use proposed alternative REL-PP2 on the basis that the alternative provides an acceptable level of quality and safety.

2.0 REGULATORY EVALUATION

The NRC regulations in 10 CFR 50.55a(f)(5)(i), "IST program update: Applicable IST Code editions and addenda," states:

The inservice test program for a boiling or pressurized water-cooled nuclear power facility must be revised by the licensee, as necessary, to meet the requirements of [10 CFR 50.55a(f)(4)].

The NRC regulations in 10 CFR 50.55a(f)(4), "Inservice testing standards requirement for operating plants," state, in part:

Throughout the service life of a boiling or pressurized water-cooled nuclear power facility, pumps and valves that are within the scope of the ASME OM Code must meet the inservice test requirements (except design and access provisions) set forth in the ASME OM Code and addenda that become effective subsequent to editions and addenda specified in [10 CFR 50.55a(f)(2) and (3)] and that are incorporated by reference in [10 CFR 50.55a(a)(1)(iv)], to the extent practical

Enclosure

within the limitations of design, geometry, and materials of construction of the components.

The NRC regulations in 10 CFR 50.55a(z), "Alternatives to codes and standards requirements," state, in part, that alternatives to the requirements of 10 CFR 50.55a(f) may be used, when authorized by the NRC, if the licensee demonstrates (1) the proposed alternatives would provide an acceptable level of quality and safety or (2) compliance with the specified requirements would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety.

Based on the above, and subject to the following technical evaluation, the NRC staff finds that regulatory authority exists for the licensee to request, and the NRC to authorize, the proposed alternative requested by the licensee.

3.0 TECHNICAL EVALUATION

3.1 Applicable Code Edition and Addenda

The CNP Fifth 10-year IST program interval began on July 1, 2016, and is scheduled to end on June 30, 2026. The OM Code of Record is the 2004 Edition through the 2006 Addenda of the ASME OM Code, as incorporated by reference in 10 CFR 50.55a.

3.2 Applicable Code Requirement

ASME OM Code (2004 Edition through the 2006 Addenda), Section IST, "Rules for Inservice Testing of Light-Water Reactor Power Plants," Subsection ISTB, "Inservice Testing of Pumps in Light-Water Reactor Nuclear Power Plants," paragraph ISTB-3300, "Reference Values," states, in part:

Initial reference values shall be determined from the results of testing meeting the requirements of ISTB-3100, Preservice Testing, or from the results of the first inservice test.

Reference values shall be established at a point(s) of operation (reference point) readily duplicated during subsequent tests.

All subsequent test results shall be compared to these initial reference values or to new reference values established in accordance with ISTB-3310, ISTB-3320, or ISTB-6200(c).

ASME OM Code, Section IST, Subsection ISTB, paragraph ISTB-5120, "Inservice Testing," for Centrifugal Pumps (except vertical line shaft centrifugal pumps); paragraph ISTB-5220, "Inservice Testing," for vertical line shaft centrifugal pumps; and paragraph ISTB-5320, "Inservice Testing," for positive displacement pumps state, in part,:

All deviations from the reference values shall be compared with the ranges of Table ISTB-5121-1 [or Table ISTB-5221-1, or Table ISTB-5321-1, respectively] and corrective action taken as specified in ISTB-6200. The vibration measurements shall be compared to both the relative and absolute criteria shown in the alert and required action ranges of Table ISTB-5121-1 [or Table ISTB-5221-1, or Table ISTB-5321-1, respectively].

ASME OM Code, Section IST, Subsection ISTB, Table ISTB-5121-1, "Centrifugal Pump Test Acceptance Criteria," provides the test acceptance criteria for centrifugal pumps.

ASME OM Code, Section IST, Subsection ISTB, Table ISTB-5221-1, "Vertical Line Shaft and Centrifugal Pumps Test Acceptance Criteria," provides the test acceptance criteria for vertical line shaft centrifugal pumps.

ASME OM Code, Section IST, Subsection ISTB, Table ISTB-5321-1, "Positive Displacement Pump (Except Reciprocating) Test Acceptance Criteria," provides the acceptance criteria for positive displacement pumps (except reciprocating pumps).

The licensee requested to use proposed alternative REL-PP2 for the pumps listed in Table 1, "IST Pumps," of its initial submittal dated October 5, 2020, and updated in its letter dated February 25, 2021.

3.3 Reason for Request

Table 1 of the licensee's initial submittal dated October 5, 2020, and updated in its letter dated February 25, 2021, lists pumps in the IST program at CNP. Where the vibration reference values (V_r) are less than 0.05 inches per second (ips), the test criteria established by the ASME OM Code for pumps with such low values for V_r will have very small ranges. The licensee states, in part:

Small values for V_r result in small acceptable ranges for pump operation. The acceptable range defined in Table ISTB-5121-1, Table ISTB-5221-1 and Table ISTB-5321-1 is less than or equal to $2.5V_r$. Based on such a small acceptable range, the smooth running pump (i.e., one that has a very low vibration reference value of ~0.05 ips) could be subject to unnecessary corrective action caused by numerically small changes in vibration levels.

3.4 Proposed Alternative

The licensee proposes a minimum vibration reference value V_r of 0.05 ips for velocity measurements to determine the Acceptable Range, Alert Range, and Required Action Range for smooth-running pumps at CNP. In its letter dated February 25, 2021, the licensee clarified its request to implement ASME OM Code Case OMN-22, "Smooth Running Pumps," for the remainder of the Fifth 10-year IST program interval at CNP. For pumps with a measured V_r that exceeds 0.05 ips, the licensee will continue to implement the requirements of the ASME OM Code, Section IST, Subsection ISTB, paragraph ISTB--3300, for establishing reference values.

3.5 NRC Staff Evaluation

The ASME OM Code as incorporated by reference in 10 CFR 50.55a includes IST program requirements for monitoring the vibration of pumps within the scope of the OM Code. The ASME OM Code specifies criteria for the Acceptable Range, Alert Range, and Required Action Range for various types of pumps in Subsection ISTB of the ASME OM Code. Per paragraph ISTB-3300, the vibration reference values shall be established when the pump is known to be operating acceptably. For pumps whose reference values are very small, hydraulic noise, instrument error, or other sources not indicative of degraded pump performance can represent a significant portion of the pump vibration measurement. For such pumps with very small reference values, a relatively small increase in vibration magnitude might cause a pump to enter

the Alert Range or Required Action Range although the pump is operating acceptably. The pump might enter these ranges due to variations in flow, instrument accuracies, or other causes not associated with degradation of pump performance. Pumps that operate with low vibration levels are typically referred to as “smooth-running” pumps. In that the Acceptable Range for a smooth-running pump might be very narrow, the pump could be subjected to unnecessary corrective action due to entry into the Alert Range or Required Action Range even though the pump is operating acceptably.

As specified in its letter dated February 25, 2021, the licensee proposes to implement ASME OM Code Case OMN-22 for the pumps listed in Table 1 of its initial submittal dated October 5, 2020, and updated in its letter dated February 25, 2021, which meet the provisions of the Code Case now or in the future. ASME OM Code Case OMN-22 has been approved by the ASME OM Standards Committee, with the NRC representative voting in the affirmative. ASME OM Code Case OMN-22 has also been approved by the ASME Board of Nuclear Codes and Standards.

ASME OM Code Case OMN-22 is included in proposed Revision 4 to NRC Regulatory Guide (RG) 1.192, “Operation and Maintenance Code Case Acceptability, ASME OM Code,” where it is listed in the table of Code Cases acceptable for use. There are no conditions in proposed Revision 4 to RG 1.192 on the use of ASME OM Code Case OMN-22. RG 1.192, Revision 4, is currently scheduled to be incorporated by reference in 10 CFR 50.55a in the spring of 2022. In addition to other ASME OM Code editions and addenda, ASME OM Code Case OMN-22 is applicable to the 2004 Edition through the 2006 Addenda of the ASME OM Code, which is the licensee’s Code of Record for its Fifth 10-year IST program interval at CNP.

ASME OM Code Case OMN-22 specifies criteria for the Acceptable Range, Alert Range, and Required Action Range for the vibration of smooth-running pumps, and includes provisions for the analysis of the measured vibration for the applicable pumps. In its alternative request, the licensee states that vibration monitoring for smooth-running pumps will be combined with additional monitoring via the CNP Predictive Maintenance Program. In addition, the CNP Predictive Maintenance Program includes periodic oil sampling and analysis where applicable. The licensee states that all pumps in the IST program will remain in the CNP Predictive Maintenance Program scope even if certain pumps have very low vibration readings and are considered to be smooth-running pumps. The licensee also notes in the alternative request that if the measured parameters for oil sampling and analysis are outside of the normal operating range or are determined by analysis to be trending toward an unacceptable degraded state, appropriate actions will be taken that may include increased monitoring of reservoirs, establishment of the rate of change, review of component and associated system specific information to identify the cause of the condition, and removal of the pump from service to perform maintenance.

The NRC staff finds that the use of ASME OM Code Case OMN-22 as described in the licensee’s request will provide an acceptable method for monitoring the performance of smooth-running pumps at CNP. In particular, the proposed alternative will provide adequate indication of pump performance with the licensee’s Predictive Maintenance Program providing assurance of the ability to detect degrading pump performance in advance of when the pump might reach an unacceptable operating condition. Therefore, the NRC staff finds that the proposed alternative REL-PP2 for the pumps listed in Table 1 of the licensee’s initial submittal dated October 5, 2020, and updated in its letter dated February 25, 2021, at CNP will provide an acceptable level of quality and safety in accordance with 10 CFR 50.55a(z)(1).

4.0 CONCLUSION

As set forth above, the NRC staff finds that the proposed alternative REL-PP2 provides an acceptable level of quality and safety for the pumps at CNP listed in Table 1 of the licensee's initial submittal dated October 5, 2020, and updated in its letter dated February 25, 2021. Therefore, the NRC staff concludes that the licensee has adequately addressed the regulatory requirements set forth in 10 CFR 50.55a(z)(1) to provide an acceptable level of quality and safety for the alternative proposed for the specified pumps at CNP. Therefore, the NRC staff authorizes proposed alternative REL-PP2 for the Fifth 10-year IST program interval at CNP, scheduled to end on June 30, 2026.

All other ASME Code requirements for which relief was not specifically requested and approved in the subject requests for relief remain applicable.

Principal Contributors: Nicholas Hansing
Thomas Scarbrough

Date: June 2, 2021

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REQUEST REL-PP2 RELATED TO FIFTH 10-YEAR INSERVICE TESTING
PROGRAM INTERVAL (EPID L-2020-LLR-0119) DATED JUNE 2, 2021

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