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

August 23, 2019

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, UNIT NO. 2 - PROPOSED ALTERNATIVE ISIR-4-10 REGARDING FOURTH INSERVICE INSPECTION PROGRAM INTERVAL (EPID L-2019-LLR-0054)

Dear Mr. Gebbie:

By letter dated May 30, 2019 (Agencywide Document Access and Management System (ADAMS) Accession No. ML19155A074), Indiana Michigan Power Company (I&M or the licensee) proposed an alternative to the requirements of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel (BPV) Code, Section XI, Table IWB-2500-1, for Categories B-A, B-D, B-N-2, and B-N-3, examinations for Donald C. Cook Nuclear Plant (CNP), Unit 2, reactor pressure vessel welds, nozzle welds, interior attachments, and core support structure, respectively.

Specifically, pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR) 50.55a(z)(1), the licensee proposed an alternative to credit the subject examinations to be performed before February 29, 2020, for both the extended third and successive fourth inservice inspection (ISI) intervals at CNP, Unit 2, on the basis that the alternative provides an acceptable level of quality and safety.

The U.S. Nuclear Regulatory Commission (NRC) staff reviewed the proposed alternative and determined, as set forth in the enclosed safety evaluation, that the proposed alternative provides an acceptable level of quality and safety. Accordingly, the NRC staff concludes that the licensee has adequately addressed all of the regulatory requirements set forth in 10 CFR 50.55a(z)(1). Therefore, the NRC staff authorizes the use of ISIR-4-10 at CNP, Unit 2, for the remainder of the fourth ISI interval with an ending date of February 29, 2020, for ASME BPV Code, Categories B-A, B-D, B-N-2, and B-N-3, items.

All other requirements of the ASME BPV Code, Section XI, for which an alternative has not been specifically requested remain applicable, including third-party review by the Authorized Nuclear Inservice Inspector.

If you have any questions, please contact Robert Kuntz at 301-415-3733 or via e-mail at Robert.Kuntz@nrc.gov

Sincerely,

/RA by Michael Ortenak for/

Lisa M. Regner, Acting Branch Chief
Plant Licensing Branch III
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-316

Enclosure: Safety Evaluation

cc: Listserv

SUBJECT: DONALD C. COOK NUCLEAR PLANT, UNIT NO. 2 - PROPOSED ALTERNATIVE ISIR-4-10 REGARDING FOURTH INSERVICE INSPECTION PROGRAM INTERVAL (EPID L-2019-LLR-0054) DATED AUGUST 23, 2019

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OFFICE	NRR/DORL/LPL3/PM	NRR/DORL/LPL3/LA	NRR/DMLR/MVIB/BC	NRR/DORL/LPL3/BC(A)
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DATE	8/22/19	7/15/19	8/23/19	8/23/19

UNITED STATES
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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

PROPOSED ALTERNATIVE ISIR-4-10 REGARDING

FOURTH INSERVICE INSPECTION PROGRAM INTERVAL

INDIANA MICHIGAN POWER COMPANY

DONALD C. COOK NUCLEAR PLANT, UNIT 2

DOCKET NO. 50-316

1.0 INTRODUCTION

By letter dated May 30, 2019 (Agencywide Document Access and Management System (ADAMS) Accession No. ML19155A074), Indiana Michigan Power Company (I&M or the licensee) proposed an alternative from the requirements of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel (BPV) Code, Section XI, Table IWB-2500-1, for Categories B-A, B-D, B-N-2, and B-N-3, examinations for Donald C. Cook Nuclear Plant (CNP), Unit 2, reactor pressure vessel (RPV) welds, nozzle welds, interior attachments, and core support structure, respectively.

Specifically, pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR) 50.55a(z)(1), the licensee proposed an alternative to credit the subject examinations to be performed before February 29, 2020, for both the extended third and successive fourth inservice inspection (ISI) intervals at CNP, Unit 2, on the basis that the alternative provides an acceptable level of quality and safety.

2.0 REGULATORY EVALUATION

Adherence to Section XI of the ASME BPV Code is mandated by 10 CFR 50.55a(g)(4), which states, in part, that ASME Code Class 1, 2, and 3 components will meet the requirements, except the design and access provisions and the pre-service examination requirements, set forth in Section XI of the ASME BPV Code.

The regulation in 10 CFR 50.55a(z) states that alternatives to the requirements of paragraphs (b) through (h) of 10 CFR 50.55a, or portions thereof, may be used when authorized by the Director, Office of Nuclear Reactor Regulation. A proposed alternative must be submitted and authorized prior to implementation. The licensee must demonstrate that the proposed alternatives provide an acceptable level of quality and safety, or 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 U.S. Nuclear Regulatory Commission (NRC) staff finds that the licensee may request the use of an alternative and the NRC has the regulatory authority to authorize the proposed alternative.

3.0 TECHNICAL EVALUATION

3.1 ASME BPV Code Component Affected

The affected components are the subject plant RPV welds, full penetration nozzle welds, interior attachments, and core support structure. The following examination categories and item numbers from IWB-2500 and Table IWB-2500-1 of the ASME BPV Code, Section XI, are listed in ISIR-4-10:

Exam Category	Item No.	Description
B-A	B1.11	Circumferential Shell Welds
B-A	B1.12	Longitudinal Shell Welds
B-A	B1.21	Circumferential Head Welds
B-A	B1.22	Meridional Head Welds
B-A	B1.30	Shell-to-Flange Weld
B-D	B3.90	Nozzle-to-Vessel Welds
B-D	B3.100	Nozzle Inner Radius Section
B-N-2	B13.60	Interior Attachments Beyond Beltline Region
B-N-3	B13.70	Core Support Structure

3.2 Applicable Code Edition and Addenda

For the fourth 10-year ISI interval at CNP, Unit 2, the code of record for the inspection of ASME Code Class 1, 2, and 3 components is the 2004 Edition of the ASME BPV Code, Section XI.

3.3 Applicable Code Requirements

ASME BPV Code, Section XI, paragraph IWB-2412, “Inspection Program B,” requires volumetric examination of essentially 100 percent of the total number of RPV pressure-retaining welds and visual examinations of RPV components identified in Table IWB-2500-1, once each 10-year interval.

ASME BPV Code, Section XI, IWA-2430(d)(2) requires that an examination performed to satisfy requirements of either the extended interval or the successive interval shall not be credited for both intervals.

3.4 Licensee’s Proposed Alternative

In ISIR-4-10, the licensee proposes to use an alternative to the requirement of ASME BPV Code, IWA-2430(d)(2), to permit the use of an examination to satisfy the requirements of both the third extended interval and the current fourth interval.

3.5 Licensee’s Basis for Alternative

In ISIR-4-10, the licensee states that the alternatives approved in the safety evaluations (SEs) for the RPV welds and full penetration nozzle welds (ADAMS Accession No. ML091260163) and for interior attachments and core support structure (ADAMS Accession No. ML091320549)

permit the extension of the examination interval for the respective components from 10 to 20 years. The basis for these approvals is that the alternatives provide an acceptable level of quality and safety pursuant to 10 CFR 50.55a(z)(1). Therefore, performing the subject examinations at the approved time and crediting the examinations for both the extended third ISI interval and the regular fourth ISI interval (with the same ISI end date) will not create any unnecessary risk.

3.6 Duration of Alternative

The proposed alternative is for the remainder of the fourth ISI interval, which is scheduled to end on February 29, 2020.

4.0 NRC STAFF EVALUATION

The NRC authorized alternatives to the examination requirements of the ASME BPV Code, Section XI, for Category B-A (RPV welds), B-D (RPV nozzle welds), B-N-2 (interior attachments), and B-N-3 (core support structure) for pressurized-water reactors to extend the ISI interval of the subject components from 10 years to 20 years. These NRC authorizations allow licensees to complete the ASME BPV Code required examination for certain categories for a 10-year ISI interval in 20 years. The technical basis for the alternative is documented in WCAP-16168-NP-A, Revision 3, "Risk-Informed Extension of the Reactor Vessel In-Service Inspection Interval" (ADAMS Accession No. ML11306A084).

WCAP-16168 provides a basis for the acceptability of 20-year inspection interval for ASME BPV Code Categories B-A and B-D components of pressurized water reactors designed by Westinghouse, Combustion Engineering, and Babcock and Wilcox (B&W) through the use of risk-informed analyses and probabilistic fracture mechanics for a pilot plant of each design. The NRC staff's SE for WCAP-16168 finds the alternative acceptable for use based on consistency with the principles contained in Regulatory Guide 1.174, Revision 1, "An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Licensing Basis" (ADAMS Accession No. ML17317A256). Regarding plant-specific application of WCAP-16168, the associated SE states, "a relief for an alternative, in accordance with 10 CFR 50.55a(a)(3)(i) [now 10 CFR 50.55a(z)(1)], must be submitted and approved by the NRC to extend the ISI interval." The SE further discusses conditions upon its use to provide plant-specific information to demonstrate the applicability of the WCAP. The following condition is related to future inspections:

> The 20-year inspection interval is a maximum interval and will be granted on an interval-by-interval basis. In its request for an alternative, each licensee shall identify the years in which future inspection will be performed. The dates provided must be within plus or minus one refueling cycle of the dates identified in the implementation plan provided to the NRC in PWROG [Pressurized Water Reactor Owners Group] letter OG-10-238 [ADAMS Accession No. ML11153A033].

While the SE allows an ISI interval be extended from 10 years to 20 years, the SE is silent on the inspection requirements on the subsequent ISI interval which overlaps with the last 10 years of the extended ISI interval and ends at the same date of the extended ISI interval.

NRC Assessment of the Licensee's Request

In ISIR-4-10, I&M has determined that the fourth 10-year ISI interval coexists with the extended third ISI interval. Since IWA-2430(d)(2) requires that an examination performed to satisfy requirements of either the extended interval or the successive interval shall not be credited for both intervals, the licensee proposed an alternative to IWA-2430(d)(2) to permit use of one examination to satisfy the requirements of both the third extended interval and the fourth interval.

Based on the technical justification provided in WCAP-16168, and the licensee's conformance to the requirements of WCAP-16168, the NRC staff finds that simultaneously conducting the examiniation required by the ASME Code twice, once for the third interval and once for the fourth, provides no benefit to the safety of the plant when compared with the licensee's proposal to conduct the examination only once. As such, the NRC finds that the licensee's proposed alternative provides an acceptable level of quality and safety.

5.0 CONCLUSION

As set forth above, the NRC staff determined that the licensee demonstrated that the proposed alternative provides an acceptable level of quality and safety. Accordingly, the NRC staff concludes that the licensee has adequately addressed all of the regulatory requirements set forth in 10 CFR 50.55a(z)(1). Therefore, the NRC staff authorizes the use of ISIR-4-10 at CNP, Unit 2, for the remainder of the fourth ISI interval with an ending date of February 29, 2020, for ASME BPV Code, Categories B-A, B-D, B-N-2, and B-N-3, items.

All other requirements of the ASME BPV Code, Section XI, for which an alternative has not been specifically requested remain applicable, including third-party review by the Authorized Nuclear Inservice Inspector.

Principal Contributor: Simon Sheng, NRR

Date of issuance: August 23, 2019