From:	Scott Wall
Sent:	Thursday, November 3, 2022 2:23 PM
To:	Michael K. Scarpello
Cc:	Helen L Levendosky; Nancy Salgado; Matthew Mitchell; Néstor Féliz Adorno; Jay Collins; Karen Sida; Varoujan Kalikian; Paul Zurawski; Joseph Mancuso; Atif Shaikh; Eric Magnuson
Subject:	D.C. Cook Nuclear Plant Unit No. 2 - Verbal Authorization of Relief Request ISIR-5-06 Regarding Alternative to N-729-6 for RPV Head Visual Examination (EPID No. L-2022-LLR-0073)

Dear Mr. Scarpello:

By telephone conversation on November 3, 2022, the U.S. Nuclear Regulatory Commission (NRC) staff provided a verbal authorization to Indiana Michigan Power Company (I&M, the licensee) for the proposed alternative ISIR-5-06 to the requirements of Title 10 of the *Code of Federal Regulations* Part 50 (10 CFR 50) 55a(g)(6)(ii)(D), which requires American Society of Mechanical Engineer's Boiler and Pressure Vessel (ASME) Code Case N-729-6 for inspection of the reactor vessel closure head (RVCH) at Donald C. Cook Nuclear Plant, Unit No. 2 (Cook Unit 2). The licensee had submitted Relief Request Number ISIR-5-06 for NRC review and approval, proposing an alternative to perform a visual examination of the bare metal RVCH during the next refueling outage (U2C28), in accordance with the latest revision of Code Case N-729 in 10 CFR 50.55a. The NRC staff's evaluation and verbal authorization is repeated at the end of this e-mail.

The following NRC and licensee personnel participated in the conference call:

NRC
Scott Wall – Acting Chief, Plant Licensing Branch 3
Matthew Mitchell - Chief, Piping and Head Penetrations Branch
Varoujan Kalikian – Materials Engineer
Karen Sida – Materials Engineer
Néstor Féliz Adorno – Chief, Engineering and Reactor Projects Branch
Paul Zurawski – Senior Resident Inspector, DC Cook
Joseph Mancuso – Resident Inspector, DC Cook
Atif Shaikh – Senior Reactor Inspector
Eric Magnuson – Reactor Inspector

I&M
Q. Shane Lies – Senior Vice President and Chief Nuclear Officer
Kelly J Ferneau – Site Vice President
Michael Scarpello – Director, Nuclear Regulatory Compliance and Licensing
Helen Levendosky – Manager, Nuclear Regulatory Compliance and Licensing
Jeff McClelland – Managing Director Engineering
Glenn Chatterton – ISI Program Owner
Theresa M Willson – Nuclear Engineer, Boric Acid Corrosion Control Program Owner
Richard A Wynegar – Licensing Engineer

Please contact me if you have any questions.

Scott P. Wall, LSS BB, BSP

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VERBAL AUTHORIZATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
FOR RELIEF REQUEST NUMBER ISIR-5-06
ALTERNATE TO THE SUPPLEMENTARY EXAMINATION REQUIREMENTS
OF REACTOR VESSEL CLOSURE HEAD PENETRATION NOZZLES
INDIANA MICHIGAN POWER COMPANY
DONALD C. COOK NUCLEAR PLANT, UNIT NO. 2
DOCKET NO. 50-316
EPID: L-2002-LLR-0073

Technical Evaluation read by Matthew Mitchell, Chief of the Piping and Head Penetration Branch, Office of Nuclear Reactor Regulation

By letter dated October 24, 2022 (Agencywide Documents Access and Management System Accession No. ML22297A211), Indiana Michigan Power Company (the licensee), pursuant to Title 10 of the *Code of Federal Regulations* [10 CFR], Section 50.55a(z)(2), requested an alternative to Paragraph 3200(b) of American Society of Mechanical Engineers Code Case N-729-6 which is mandated under requirements of 10 CFR 50.55a(g)(6)(ii)(D) for Donald C. Cook, [Cook] Unit 2. The proposed alternative, Relief Request ISIR-5-06, addressed the required supplemental examinations for reactor vessel closure head control rod drive mechanism nozzle penetration numbers 77 and 78. The licensee submitted the proposed alternative for the current fall 2022 refueling outage to support operation for one cycle until Cook Unit 2's next scheduled refueling outage (U2C28).

The licensee is required by the regulations in 10 CFR 50.55a(g)(6)(ii)(D)(1) to implement the inspection requirements of Code Case N-729-6, "Alternative Examination Requirements for PWR Reactor Vessel Upper Heads With Nozzles Having Pressure-Retaining Partial-Penetration Welds Section XI, Division 1." Since the Cook Unit 2 reactor vessel closure head penetrations are constructed of Alloy 690, the Cook Unit 2 reactor pressure vessel head is categorized as Item No. B4.30, "Head with nozzles and partial penetration welds of Primary Water Stress Corrosion Cracking (PWSCC)-resistant materials."

During the performance of bare metal visual examinations of the reactor pressure vessel closure head during the current refueling outage (U2C27), the licensee found evidence on the surface of the reactor pressure vessel closure head of leakage from above the head, which consisted of boric acid deposits, discoloration, and entrained residue. After light cleaning and evaluation, the licensee determined that these could be relevant conditions of possible nozzle leakage in accordance with Paragraph 3142.1 of Code Case N-729-6. Paragraph 3142.2 of the Code Case N-729-6 requires nozzles with relevant conditions to have supplemental examinations consisting of: (1) a volumetric examination of the nozzle and surface examination of the partial penetration weld; or (2) surface examination of the nozzle tube inside surface, the partial penetration weld, and nozzle tube outside surface below the weld, in accordance with Paragraph 3200(b) of Code Case N-729-6.

The licensee requested authorization for this alternative in accordance with the requirements of 10 CFR 50.55a(z)(2) on the basis that performing the supplemental examinations represents a hardship or unusual difficulty without a compensating increase in the level of quality and safety. The licensee identified a potential hardship by stating that the supplemental examinations of Paragraph 3200(b) of Code Case N-729-6 would result in approximately 754 mRem of additional dose to personnel for little benefit in the quality of the examination. As such, the NRC staff finds that the radiological dose presents a potential hardship basis for the licensee consistent with 10 CFR 50.55a(z)(2).

During this outage the licensee cleaned the remaining area of the reactor vessel closure head surface, including each annulus between the head and nozzle surface, and verified the structural integrity of the reactor vessel closure head. During the upcoming cycle of operation, the licensee stated that it would monitor for leakage in a manner which will continue to ensure the structural integrity of the reactor vessel closure head. The licensee further stated that it will perform a bare metal visual examination of the Cook Unit 2 reactor vessel closure head at the next refueling outage, in accordance with the latest revision of Code Case N-729 endorsed in 10 CFR 50.55a, to ensure that no leakage is occurring from the reactor vessel closure head nozzles.

Based on the information provided by the licensee and reviewed by the staff, the NRC staff finds that there is reasonable assurance of adequate protection based on:

- The visual examinations of the reactor vessel closure head identified thermocouple sealing assemblies above penetration numbers 77 and 78 as being a credible source of the deposits observed on the penetrations.

- The operating experience of primary water stress corrosion cracking-resistant reactor vessel closure head nozzles and associated partial penetration welds.

- The enhanced leakage monitoring with the ability of detecting 0.1 gallon per minute of unidentified leakage and the administrative controls used to detect signs of leakage.

Therefore, the NRC staff finds, given the actions of the licensee's proposed alternative, under Relief Request Number ISIR-5-06, that there is reasonable assurance that the structural integrity of the Cook Unit 2 reactor vessel closure head will be maintained for one cycle of operation. Further, the staff concludes there would be limited gain in quality and safety by performing the required supplemental examinations to verify that no indications of cracking are present for the reactor vessel closure head penetration nozzles 77 and 78 during the current refueling outage. Given the hardship, the NRC staff finds that (1) there is reasonable assurance that the licensee's proposed alternative has a minimal impact on quality and safety; and (2) the licensee's hardship justification is acceptable.

Authorization read by Scott P. Wall, Acting Chief of the Plant Licensing Branch III, Office of Nuclear Reactor Regulation

As Acting Chief of the Plant Licensing Branch III, Office of Nuclear Reactor Regulation, I agree with the conclusions of the Piping and Head Penetrations Branch.

The NRC staff concludes that the proposed alternative, under Relief Request Number ISIR-5-06, for Cook Unit 2 will provide reasonable assurance of adequate safety for the reactor vessel closure head and the specified penetration locations until the next scheduled refueling

outage, U2C28. The NRC staff finds that complying with the supplemental examination requirements of Paragraph 3200(b) of American Society of Mechanical Engineers Code Case N-729-6, as mandated by 10 CFR 50.55a(g)(6)(ii)(D), would result in hardship or unusual difficulty without a compensating increase in the 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)(2) for deferral of these supplemental examinations.

Therefore, effective November 3, 2022, the NRC authorizes the use of Relief Request Number ISIR-5-06, at Cook Unit 2 until the next scheduled refueling outage, U2C28.

All other requirements in the American Society of Mechanical Engineers Code, Section XI, and 10 CFR 50.55a(g)(6)(ii)(D) for which relief was not specifically requested and approved in this relief request remain applicable, including third-party review by the Authorized Nuclear Inservice Inspector.

This verbal authorization does not preclude the NRC staff from asking additional clarification questions regarding Relief Request Number ISIR-5-06 while preparing the written safety evaluation.

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