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U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D.C. 20555-0001

Donald C. Cook Nuclear Plant Units 1 and 2
Response to Request for Additional Information Regarding Relief Request for
Limited Coverage Examinations Performed In
The Fourth 10-Year Inspection Interval

References:

1. Letter from Q. S. Lies, Indiana Michigan Power Company (I&M), to U. S. Nuclear Regulatory Commission (NRC), "Donald C. Cook Nuclear Plant Units 1 and 2 Relief Request for Limited Coverage Examinations Performed In The Fourth 10-Year Inspection Interval," dated March 1, 2021, Agencywide Documents Access and Management System Accession (ADAMS) No. ML21067A102.

2. E-mail from S. P. Wall, NRC, to M. K. Scarpello, I&M, "FINAL RAI - D.C. Cook 1 & 2 – Relief Request ISIR-4-11, Impractical Examinations for the Fourth 10-Year ISI Interval (EPID No. L-2021-LLR-0017)," dated May 20, 2021, ADAMS No. ML21140A305.

This letter provides Indiana Michigan Power Company's (I&M), licensee for Donald C. Cook Nuclear Plant (CNP) Units 1 and 2, response to the Request for Additional Information (RAI) by the U. S. Nuclear Regulatory Commission (NRC) regarding a Relief Request from the examination coverage requirement of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code, Section XI, at CNP. Pursuant to Title 10 of the Code of Federal Regulations, paragraph 50.55a(g)(5)(iii), I&M submitted Relief Request ISIR-4-11 for NRC review and approval on the basis that the required examination coverage is impractical due to physical obstructions and limitations imposed by design, geometry, and materials of construction of the subject components. The relief request presents the welds that were inspected during the Fourth 10-year Inspection Interval.

By Reference 1, I&M submitted a Relief Request for limited coverage examinations performed in the Fourth 10-Year Inspection Interval. By Reference 2, the NRC submitted an RAI concerning the Relief Request submitted by I&M as Reference 1.

I&M is providing, as Enclosure 1 to this letter, its response to the NRC's RAI from Reference 2.

There are no new regulatory commitments made in this letter. Should you have any questions, please contact Mr. Michael K. Scarpello, Regulatory Affairs Director, at (269) 466-2649.

Sincerely,

Q. Shane Lies
Site Vice President

JMT/kmh

Enclosure:

1. Response to Request for Additional Information Regarding a Relief Request for Limited Coverage Examinations Performed in the Fourth 10-Year Inspection Interval

c: R. J. Ancona – MPSC
EGLE – RMD/RPS
J. B. Giessner – NRC Region III
D. L. Hille – AEP Ft. Wayne, w/o enclosures
NRC Resident Inspector
R. M. Sistevaris – AEP Ft. Wayne, w/o enclosures
S. P. Wall – NRC Washington, D.C.
A. J. Williamson – AEP Ft. Wayne, w/o enclosures

Enclosure 1 to AEP-NRC-2021-43

Response to Request for Additional Information Regarding a Relief Request for Limited Coverage Examinations Performed in the Fourth 10-Year Inspection Interval

By letter dated March 1, 2021 (Agencywide Documents Access and Management System Accession No. ML21067A102), Indiana Michigan Power Company (I&M), the licensee for Donald C. Cook Nuclear Plant (CNP) Units 1 and 2, submitted a Relief Request for limited coverage examinations performed in the Fourth 10-Year Inspection Interval.

The U. S. Nuclear Regulatory Commission (NRC) staff is currently reviewing the submittal and has determined that additional information is needed in order to complete the review. The request for additional information (RAI) and I&M's response are provided below.

Applicable Regulation and Guidance

Pursuant to 10 CFR 50.55a(g)(5)(iii), "ISI program update: Notification of impractical ISI Code requirements," if the licensee has determined that conformance with a ASME Code requirement is impractical for its facility, the licensee must notify the NRC and submit, as specified in § 50.4, information to support the determinations. Determinations of impracticality in accordance with 10 CFR 50.55a(g)(5)(iii) must be based on the demonstrated limitations experienced when attempting to comply with the ASME Code requirements during the ISI interval for which the request is being submitted. Requests for relief made in accordance with 10 CFR 50.55a(g)(5)(iii) must be submitted to the NRC no later than 12 months after the expiration of the initial or subsequent 120-month inspection interval for which relief is sought.

Pursuant to 10 CFR 50.55a(g)(6)(i), "Impractical ISI requirements: Granting of relief," the NRC will evaluate determinations under 10 CFR 50.55a(g)(5) that ASME Code requirements are impractical. The NRC may grant such relief and may impose such alternative requirements as it determines are authorized by law, will not endanger life or property or the common defense and security, and are otherwise in the public interest giving due consideration to the burden upon the licensee that could result if the requirements were imposed on the facility.

Request for Additional Information

RAI-NVIB-01

"Attachment 1 to Relief Request ISIR-4-11 states that weld 6"-2-RC-22 at the pressurizer relief valve nozzle contains a previously detected indication.

a. *Discuss whether the indication has grown from the initial detection to the inspection performed in 2012.*
b. *If the indication has grown, discuss on what basis it was determined that the indication will remain acceptable until the next inspection."*

I&M Response to RAI-NVIB-01

a. The indication did not exhibit growth when the 1997 ultrasonic data was compared to the 2012 ultrasonic data.

b. No growth of the indication was identified. The 1997 and 2012 ultrasonic data are comparable, and the indication was evaluated and determined to be acceptable per the requirements of American Society of Mechanical Engineers (ASME), Section XI, Paragraph IWB-3512, Standards for Examination Category B-D, Full Penetration Welds of Nozzles in Vessels.

RAI-NVIB-02

"Attachment 1 to Relief Request ISIR-4-11 reports that weld 6"-2-RC-25 at the pressurizer relief valve nozzle contains a previously detected indication (the first indication). Also, the licensee reported that it detected a second indication during the inspection performed in the 2012 refueling outage.

a. Discuss whether the first indication has grown from the initial detection to the inspection performed in 2012;
b. If the first indication has grown, discuss on what basis it was determined that the indication will remain acceptable until the next inspection; and
c. Discuss the location of the first and second indications in the pipe wall thickness and clarify how these two indications were deemed acceptable (e.g. whether they were analyzed as single or as separate flaws)."

I&M Response to RAI- NVIB -02

a. During the preparation of this response it was determined that both indications were identified in 1997. The 2012 ultrasonic examination report listed the comparison to previous examination data for indication number 1, and nothing was listed for indication number 2. Per discussion with the inspection vendor, the comment was intended to be applied to both indications. This was entered into the corrective action program, and the inspection report was updated to include the comparison to previous examination data for indication number 2.

   Indication number 1 and indication number 2 did not exhibit growth when the 1997 ultrasonic data was compared to the 2012 ultrasonic data.

b. No growth of the indications was identified. The 1997 and 2012 ultrasonic data are comparable, and the indications were evaluated and determined to be acceptable per the requirements of ASME, Section XI, Paragraph IWB-3512, Standards for Examination Category B-D, Full Penetration Welds of Nozzles in Vessels.

c. The indications are located near the weld fusion line approximately 0.30 inches (") above the cladding. The indications appear to be slag inclusions based on size and signal responses. Both indications 1 and 2 were analyzed separately due to proximity and size of reflectors. Note that the full weld circumference is 44.0" and the closest distance between the edges of

indication 1 and 2 is approximately 5.0". The proximity does not connect indications for evaluation as a single indication. Final evaluations are noted as acceptable per the requirements of ASME, Section XI, IWB-3512.

RAI-NVIB-03

"Attachment 1 to Relief Request ISIR-4-11 states that for the reactor pressure vessel (RPV) lower head dollar plate weld, 2-RPV-E (2-LHC-01), the licensee achieved an examination coverage of 47.61%. The licensee stated that the limited examination coverage was caused by the bottom mounted instrumentation tubes as shown in Figures 1.27-2 and 1.27-3. The licensee detected an indication in the weld during the inspection performed in 2019.

a. *Discuss how the bottom mounted instrument tubes obstructed the examination coverage of the subject weld.*
b. *Discuss any efforts taken to increase the examination coverage. If no efforts were taken, please provide justification for the non-action."*

I&M Response to RAI-NVIB-03

a. **Summary**

The bottom mounted instrumentation (BMI) tubes obstructed the examination coverage for the reactor pressure vessel (RPV) lower head dollar plate weld, 2-RPV-E (2-LHC-01), henceforth referred to as the subject weld, by either creating spaces too small to provide sufficient access for the robot performing the examination or by being located and configured such that the robot could be damaged in some way.

BMI Tube Details

A total of 58 BMI tubes penetrate the RPV lower head. Some of these BMI tubes are adjacent to the subject weld. A diagram excerpted from drawing DC-03137 provided in Figure 1 below shows the layout of the BMI tubes in relation to the subject weld:

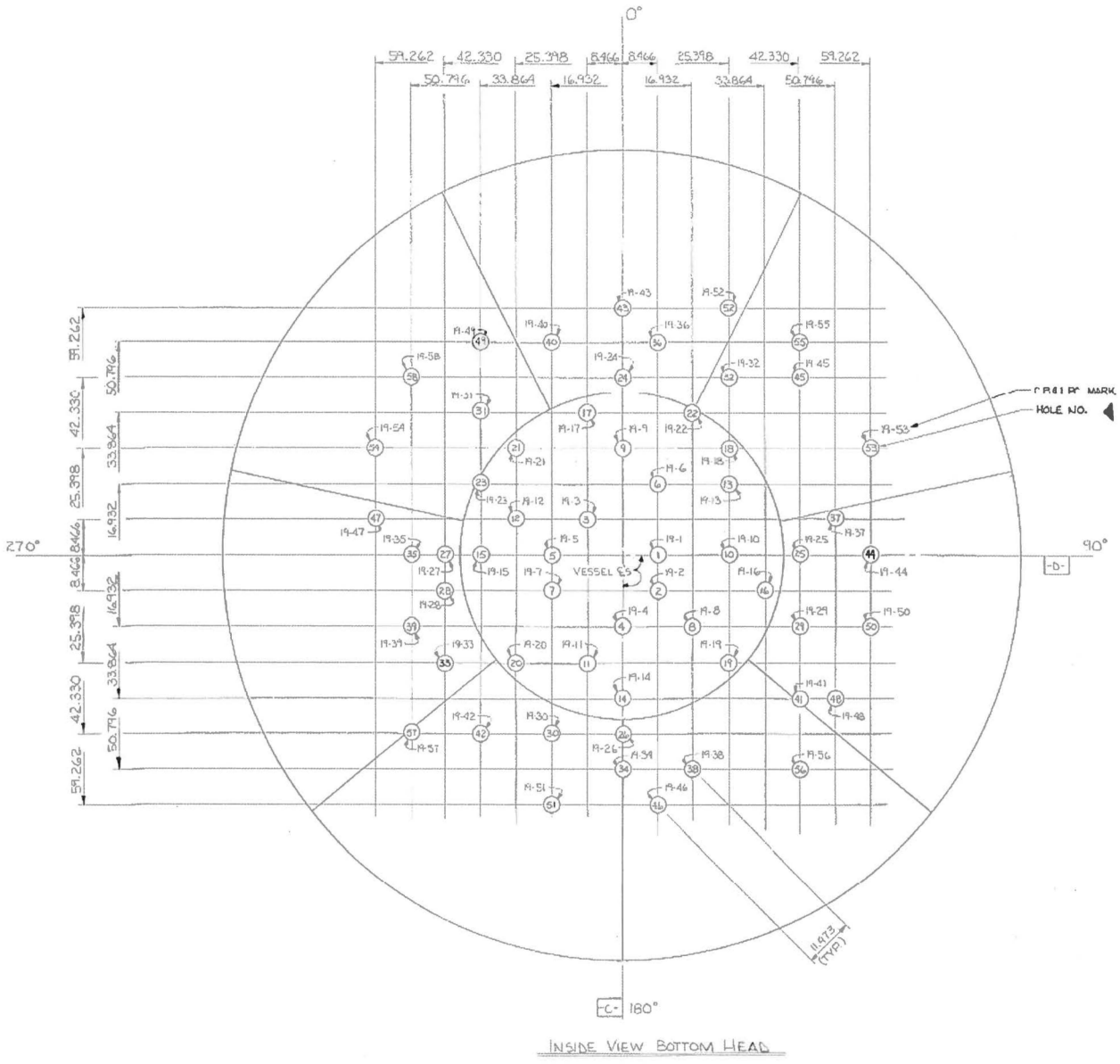

Figure 1: Layout of the BMI Tube Penetrations

Per drawing DC-03135, each BMI tube is approximately 1.50" in diameter with a collar located 6" from the inside RPV end making each BMI tube 1.75" at its widest point. Per drawing DC-03136, there is a quarter-inch throat fillet weld around the inside vessel penetration point of each BMI tube. This gives a footprint of approximately 2.00" for each BMI tube at the penetration. Per drawing DC-03136, the BMI tubes have a vertical height of approximately 12" above the inside of the bottom of the RPV.

Examination Equipment Details

The examination was performed with robotic equipment situated in the center of the RPV on a platform assembly. The platform assembly has a column through a central hub and three horizontal support legs that transition to vertical support legs that have support feet that mate to three of the core supports attached to the lower RPV walls. Attached to the column is a scanning arm that articulates vertically, horizontally and radially. On the end of the arm is an end effector to which an examination sled is attached. The examination sled contains all of the transducers and associated cables and equipment.

The examination sled must fit in between the BMI tubes to scan the subject weld. The examination sled dimensions are approximately 9.5" by 5.4". Additionally, cables run up the scanning arm to the center console, which results in a slightly larger space needed for clearance in order to sweep the examination sled along the weld.

Examination Limitation Details

The clearance needed for the examination sled to scan the subject weld is limited by the footprint of the BMI tubes. As seen in Figure 1, each square is 8.5", and there are 17 BMI tubes located within approximately 6" of the subject weld. Those BMI tubes limit the sled from scanning all or part of the adjacent portion of the subject weld. Additionally, there are 12 more BMI tubes that are located within approximately 12" of the subject weld. All of these BMI tubes either prevented scanning or reduced the scanning area in both the parallel and perpendicular direction adjacent to the associated BMI tubes.

The vertical component of the BMI tubes also limits the positioning options of the arm, end effector and examination sled when scanning the subject weld. The arm must be maneuvered so as to avoid damaging tooling or potentially snagging the cables. The vertical component of BMI tubes radially in line with the arm also limits the examination sled access to portions of the subject weld located on the far side of the BMI tubes.

The following scans from the full examination reported limitations due to BMI tube interferences and equipment concerns:

Scan Number	Indexes Completed	Comments
W5-PRP-206-218	15 of 17	Completed 15/17 sweeps due to BMI obstruction
W5-PRP-250-263-B	18 of 19	18/19 sweeps complete due to BMI
W5-PRP-321-339	23 of 24	Completed sweeps 23/24 due to BMI
W5-PRP-116-129	16 of 18	Stopped scan two segments before end 16 out of 18
W5-PRP-081-097-B-ROT	21 of 23	Completed sweeps 21/23 due to BMI
W5-PAR-212-237-A	4 of 6	Completed 4/6 to prevent BMI from snagging cable
W5-PAR-259-280-B	0 of 4	Scan not performed due to close proximity to EE that would risk damage to tool
W5-PAR-284-308-A	0 of 3	Scan not performed due to risk of damage to tooling
W5-PAR-284-305-B	4 of 5	Completed 4/5 sweeps to avoid interference w/ BMI
W5-PAR-305-327-A	4 of 8	Completed 4/8 sweeps to prevent damage to tooling
W5-PAR-333-351-A	5 of 10	5/10 sweeps completed to prevent damage to tooling
W5-PAR-014-038-A	0 of 3	Scan not performed due to risk of damage to tooling
W5-PAR-035-057-A	3 of 8	Completed 3/8 sweeps to prevent damage to tool
W5-PAR-054-070-A	16 of 19	Stopped @ sweep 16/19 to prevent damage to tool
W5-PAR-098-116-A	5 of 9	Stopped @ sweep 5/9 to prevent damage to tool
W5-PAR-122-147-A	3 of 8	Stopped @ sweep 3/8 to prevent damage to tool
W5-PAR-169-191-A	0 of 5	Scanning not performed due to risk of damaging tool
W5-PAR-169-191-A-ROT	0 of 5	Scan not performed to prevent damage to tooling
W5-PAR-122-147-A-ROT	4 of 8	Stopped @ sweep 4/8 to prevent damage to tooling
W5-PAR-098-116-A-ROT	5 of 9	Stopped @ sweep 5/9 to prevent damage to tool
W5-PAR-054-070-A-ROT	15 of 19	Stopped scan on sweep 15/19 to prevent contact w/ BMI obstruction
W5-PAR-035-057-A-ROT	3 of 8	Stopped @ sweep 3/8 to prevent damage to tooling
W5-PAR-014-038-A-ROT	0 of 3	Did not perform scan due to lack of access
W5-PAR-305-327-A-ROT	5 of 8	Stopped scan @ sweep 5/8 to prevent damage to tooling
W5-PAR-284-308-A-ROT	0 of 3	Scan not performed to prevent damage to tooling
W5-PAR-259-280-B-ROT	0 of 4	Scan not performed to prevent damage to tooling
W5-PAR-212-237-A-ROT	5 of 6	Stopped scan @ sweep 5/6 to prevent damage to tooling

I&M Response to RAI-NVIB-03:

b. Prior to performing the examination, the inspection vendor provided an examination coverage estimate for the subject weld accounting for BMI tube interference limitations of approximately 37 percent (%). As provided in Request for Relief ISIR-4-11, the actual achieved examination coverage was 47.61%. This additional examination coverage is attributed to the following efforts taken to increase the examination coverage:

- The ultrasonic examination scanning plan WDI-PJF-1322623-EPP-001, Revision 1, used to perform the examination of the subject weld was designed to conduct the examination to the maximum extent practical with the access provided and within the limitation of component geometry.
- The examination sled used to perform the examination was equipped with additional transducers for increased scan coverage.
- Rotating of the examination sled was performed for both parallel and perpendicular scans to increase the examination coverage near the BMI tubes when the clearance and configuration permitted.