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INDIANA MICHIGAN POWER

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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
UNIT 2 REACTOR PRESSURE VESSEL UPPER AND LOWER HEAD INSPECTION RESULTS

Reference:

1. Revised U. S. Nuclear Regulatory Commission Order EA-03-009, "Issuance of First Revised NRC Order (EA-03-009) Establishing Interim Inspection Requirements for Reactor Pressure Vessel Heads at Pressurized Water Reactors," dated February 20, 2004.

2. Letter from R. P. Powers, Indiana Michigan Power Company, to U. S. Nuclear Regulatory Commission Document Control Desk, "Nuclear Regulatory Commission Bulletin 2003-02: Leakage from Reactor Pressure Vessel Lower Head Penetrations and Reactor Coolant Pressure Boundary Integrity Thirty-day Response," AEP:NRC:3054-14, dated September 17, 2003.

3. Letter from William H. Ruland, U. S. Nuclear Regulatory Commission, to Mano K. Nazar, Indiana Michigan Power Company, "Donald C. Cook Nuclear Plant, Unit 2 – Relaxation of the Requirements of First Revised Order (EA-03-009) Regarding Reactor Pressure Vessel Head Inspections Dated February 20, 2004 (TAC No. MC3074)," dated September 27, 2004.

This letter provides information pertaining to reactor pressure vessel (RPV) upper and lower head inspections performed at Donald C. Cook Nuclear Plant (CNP) during the Unit 2 Cycle 15 outage. This information is submitted in

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accordance with the Nuclear Regulatory Commission (NRC) Order (Reference 1) and the commitment made in response to NRC Bulletin 2003-02 (Reference 2).

The referenced order imposed enhanced requirements for inspection of pressurized water RPV heads and related penetration nozzles. A calculation of the susceptibility category of the Unit 2 RPV upper head as represented by a value of effective degradation years (EDY) was performed to determine the required inspections per Section IV.A of the order. The EDY value at the beginning of the Unit 2 Cycle 15 refueling outage was 13.03, which combined with previous repairs, assigns this head to the high susceptibility category. This represents a reduction from previous cycles in the calculated EDY value due to the use of cycle specific operating data. In accordance with Section IV.C of the order and the relaxation approved per Reference 3, Indiana Michigan Power Company (I&M) conducted non-destructive examinations of the Unit 2 upper head RPV penetration nozzles and a bare-metal visual examination of the upper surface of the RPV head during the refueling outage that ended November 9, 2004. I&M also conducted a visual inspection of the bottom mounted instrumentation (BMI) nozzle penetrations in accordance with Bulletin 2003-02. I&M hereby submits reports of these examinations in accordance with Section IV.E of the order and the CNP commitment made in response to Bulletin 2003-02. Attachment 1 provides the report of the non-destructive examination of the RPV upper head nozzles. Attachment 2 provides the report of the bare metal visual examination of the RPV head upper surface. Attachment 3 provides the report of the visual inspection of the BMI nozzle penetrations.

The visual inspections performed on the upper head in accordance with Section IV.D of the order during the Unit 2 refueling outage did not identify any leaks or boron deposits from pressure retaining components on or above the RPV head. Therefore, no report regarding that inspection is required by Section IV.E of the order.

This letter contains no new commitments. Should you have any questions, please contact Mr. John A. Zwolinski, Director of Safety Assurance, at (269) 466-2428.

Sincerely,

Daniel P. Fadel
Engineering Vice President

KAS/rdw

Attachments:

1. Wesdyne International Report – "D. C. Cook RVHI U2C15 Final Report, Revision 1"
2. Summary Report – Bare Metal Visual Examination of the Donald C. Cook Nuclear Plant Unit 2 Reactor Pressure Vessel Upper Head
3. Summary Report – Bottom Mounted Instrumentation Penetration Inspection of the Donald C. Cook Nuclear Plant Unit 2 Reactor Pressure Vessel Lower Head

c: J. L. Caldwell, NRC Region III
K. D. Curry, Ft. Wayne AEP, w/o attachments
Director, Office of Nuclear Reactor Regulation
J. T. King, MPSC, w/o attachments
C. F. Lyon - NRC Washington, DC
MDEQ – WHMD/HWRPS, w/o attachments
NRC Resident Inspector

AFFIRMATION

I, Daniel P. Fadel, being duly sworn, state that I am Engineering Vice President of Indiana Michigan Power Company (I&M), that I am authorized to sign and file this request with the Nuclear Regulatory Commission on behalf of I&M, and that the statements made and the matters set forth herein pertaining to I&M are true and correct to the best of my knowledge, information, and belief.

Indiana Michigan Power Company

Daniel P. Fadel
Engineering Vice President

SWORN TO AND SUBSCRIBED BEFORE ME

THIS 13th DAY OF January, 2005

Notary Public

My Commission Expires 6/10/2007

ATTACHMENT 1 TO AEP:NRC:4054-11

WESDYNE INTERNATIONAL REPORT –

"D. C. COOK RVHI U2C15 FINAL REPORT, REVISION 1"

FINAL REPORT SUMMARY

1.0 DISCUSSION

During the D. C. Cook Unit 2 Outage U2C15 in October 2004, WesDyne performed nondestructive examinations (NDE) of the reactor vessel head penetrations. The purpose of the nondestructive inspection program was to identify evidence of primary water stress corrosion cracking (PWSCC) that might be present on the OD and ID surfaces of the head penetrations. Examinations of the CRDM penetration tubes also included the application of techniques to identify evidence of leakage in the shrink-fit region at the tube-to-head interface. Examinations were performed using procedures and techniques demonstrated through the EPRI/MRP protocol and/or Westinghouse internal demonstration programs. The examination program was applied in a manner acceptable within the context of the February 20, 2004, USNRC Order EA-03-009, "Establishing Interim Inspection Requirements for Reactor Vessel Heads at Pressurized Water Reactors," including the D. C. Cook Unit 2 Request for Relaxation of Requirements dated September 27, 2004.

The reactor vessel head at D. C. Cook Unit 2 is a Westinghouse design and manufactured by Chicago Bridge & Iron in Memphis, TN. The head contains 78 alloy 600 penetration tubes that are shrunk fit in the reactor vessel head and attached with alloy 182/82 partial penetration J-groove welds. The head also contains one alloy 600 vent tube, attached to the vessel head with an alloy 182/82 attachment weld.

There are a variety of configurations for the 78 penetration tubes, each configuration requiring special consideration for examination. The penetration tubes measure 4.0 inches on the OD and have an ID dimension of 2.75 inches. The wall thickness is 0.625 inches. The penetration tube configurations are as follows:

- fifty three penetration tubes with thermal sleeves installed
- seven penetration tubes with part length drive shafts
- twelve "dummy" penetration tubes and one penetration tube used as a head vent without thermal sleeves
- five thermocouple column locations without thermal sleeves

The vent line has a nominal ID dimension of 0.614 inches and a nominal OD dimension of 1.0 inch.

The nondestructive examinations were performed in accordance with the following field service procedures and field change notices (FCNs):

WCAL-002 Rev. 4	Pulser/Receiver Linearity Procedure
WDI-ET-002 Rev. 5	IntraSpect Eddy Current Inspection of J-Groove Welds in Vessel Head Penetrations
WDI-ET-003 Rev. 7	IntraSpect Eddy Current Imaging Procedure for Inspection of Reactor Vessel Head Penetrations
WDI-ET-004 Rev. 6	IntraSpect Eddy Current Analysis Guidelines (with FCN 01)
WDI-ET-008 Rev. 4	IntraSpect Eddy Current Imaging Procedure for Inspection of Reactor Vessel Head Penetrations with Gap Scanner
WDI-UT-010 Rev. 8	IntraSpect Ultrasonic Procedure for Inspection of Reactor Vessel Head Penetrations, Time of Flight Ultrasonic, Longitudinal Wave & Shear Wave (with FCN 01 and 02)
WDI-UT-011 Rev. 6	IntraSpect NDE Procedure for Inspection of Reactor Vessel Head Vent Tubes (with FCN 01)
WDI-UT-013 Rev. 6	IntraSpect UT Analysis Guidelines (with FCN 01 and 02)
WDI-STD-101 Rev. 3	RVHI Vent Tube J-Weld Eddy Current Examination (with FCN 01)
WDI-STD-114 Rev. 2	RVHI Vent Tube ID & CS Wastage Eddy Current Examination

2.0 SCOPE OF WORK

The scope of the nondestructive examinations at D. C. Cook Unit 2 was based on a plan to perform ultrasonic examinations, including time-of-flight diffraction (TOFD) ultrasonic techniques, capable of detecting axial and circumferential reflectors in the parent tube and the J-weld and eddy current examinations capable of detecting axial and circumferential degradation of the penetration ID surfaces. WesDyne performed nondestructive examinations on one vent line and 78 CRDM reactor vessel head penetrations.

Examinations of the penetration tubes were performed using the following approaches. The approach selected for each penetration was dependent upon the penetration tube configuration and penetration specific conditions.

- Sixteen penetration tubes without thermal sleeves were examined from the ID using the 7010 Open Housing Scanner.

- Sixty one penetrations were examined from the ID using the Gapscanner with Trinity blade probes which perform TOFD ultrasonic examinations and eddy current examinations simultaneously.
- The vent line tube ID surface and the vent line J-groove weld were examined using eddy current techniques with multiple coil arrays.
- The tube and roof area of penetration 43 was examined from the OD using eddy current testing techniques with the Grooveman end effector.
- An eddy current examination was performed on penetrations 43 and 74 using a special excavation sword probe with the Gapscanner end effector.

The delivery system used for the CRDM examinations at D. C. Cook Unit 2 was the Westinghouse DERI 700 manipulator.

The DERI 700 is a multi-purpose robot that can access all head penetrations and provides a common platform for all CRDM examination end effectors. The manipulator consists of a central leg, mounted on a carriage, which in turn is mounted onto a guide rail. The manipulator arm, with elbow and removable wrist, is mounted onto the carriage which travels vertically along the manipulator leg.

The DERI 700 was used to deliver 1) the Westinghouse 7010 Open Housing Scanner for ultrasonic and supplementary eddy current examinations of penetration locations without thermal sleeves and 2) the Westinghouse Gapscanner end effector for ultrasonic and supplementary eddy current examinations of penetration locations containing thermal sleeves and 3) the Grooveman end effector for eddy current examinations of the J-groove welds and penetration tube OD surfaces.

The Westinghouse 7010 Open Housing Scanner delivers an examination wand containing ultrasonic and eddy current probes to the ID surface of open reactor vessel head penetrations. The scanning motion is in a vertical direction moving from a specified height above the weld, in this case at least 2.0 inches, to the ID chamfer at the bottom of each penetration. The probe is indexed in the circumferential direction. With the open housing scanner, four examinations are conducted simultaneously. These include:

1) Time-of-flight diffraction ultrasonic examination optimized for identification of circumferentially oriented degradation on the penetration tube OD surfaces
2) Time-of-flight diffraction ultrasonic examination optimized for identification of axially oriented degradation on the penetration tube OD surfaces

3) Straight beam ultrasonic examination to identify variations in the penetration tube-to-reactor vessel head shrink fit area that might indicate a leak path

4) Eddy current examination for identification of circumferential and axial degradation on the ID surfaces of the penetration tubes

The Gapscanner end effector delivers combination blade "Trinity" probes which include a crosswound eddy current coil, a TOFD UT transducer pair and a 0° ultrasonic transducer into the annulus between the ID surface of the reactor vessel head penetration tube and the OD surface of the thermal sleeve. All three examinations are performed simultaneously. The typical annulus size is 0.125 inches. The blade probe design utilizes a flexible metal "blade" on which ultrasonic and/or eddy current probes are mounted in a spring configuration that enables the probes to ride on the ID surface of the penetration tubes. The scanning motion is in a vertical direction moving from a specified height above the weld, in this case at least 2.0 inches, to the ID chamfer at the bottom of each penetration. The probes are indexed in the circumferential direction. The Gapscanner end effector also has a probe tilt and drive unit to advance and reverse the probe in the tube/thermal sleeve annulus, a turntable to rotate the probe drive around the axis of the penetration, a lifting cylinder to raise and lower the tilt and drive unit and a centering device consisting of two clamping arms.

The Grooveman end effector delivers eddy current probes for examination of the J-groove welds and the penetration nozzle OD surfaces. The eddy current probe holders are designed to conform to the geometry of the J-groove welds and penetration OD surfaces and allow the probes to follow the contour of the assembly. Continuous positional and video feedback is provided to the operator to assist in achieving coverage of the weld and the penetration tube. Scanning of the penetration tube OD surface is typically conducted in a vertical direction and the probes are indexed in the circumferential direction. For scanning of the J-groove welds, scanning is conducted in the circumferential direction along the weld and the index is in a direction perpendicular to the weld.

The vent line weld scanner is delivered manually beneath the head and applies an array of plus-Point eddy current coils to the vent tube J-weld surface. The entire weld is examined with two 360 degree scans.

The vent line tube scanner is also delivered manually beneath the head and applies an array of plus-Point eddy current coils and a low frequency bobbin probe to the inside diameter surface of the vent tube.

Penetrations 74 and 75 were examined using dye penetrant techniques. Both penetrations had recordable indications in the J-weld region. These areas were repaired using weld overlay techniques as described in WCAP-15987-P, revision 2-P-A, as described in AEP's letter, Request for Relief for Donald C. Cook Nuclear Plant, "Proposed Alternative to Repair Requirements of Section XI of the ASME Code for Unit 1 and 2

Reactor Vessel Head Penetrations," which was submitted by letter dated October 22, 2004, as revised October 27, 2004. The repair technique was approved by phone conversation on October 28, 2004, between J. Zwolinski (AEP), et al., with T. Chan and L. Raghavan (NRC), et al., when the NRC staff verbally approved the licensee's relief request in accordance with 10 CFR 50.55a (a) (3) (i). Post repair examination data had no indications, and is included in Volume 1, Section 4 of this report.

The top 3 OD threads on the downhill side of penetration 73 were also examined by liquid penetrant techniques. No indications were detected. This examination was performed by Cook personnel.

A bare metal remote visual inspection of 100% of the RPV head surface was performed in accordance with EA-03-009, section IV.C (5) (a) by contractor and AEP personnel. No evidence of leakage or base metal wastage was identified.

3.0 EXAMINATION RESULTS

The following tables provide a summary of all RVHP nondestructive examinations performed at D. C. Cook Unit 2 during the U2C15 October 2004 refueling outage. Penetration numbers with an asterisk show eddy current indications and have been identified as special interest by D. C. Cook personnel. The final disposition of the examination results is provided in the tables below.

3.1 7010 Open Housing Scanner Ultrasonic and Eddy Current Examinations

Sixteen penetrations without thermal sleeves were examined from the ID using the Westinghouse Open Housing Scanner.

Pen #	Axial TOFD Channel 1	Circ TOFD Channel 2	Delta Channel 3	2.25 MHz 0°	Supplementary Tube ID ECT
10	NDD	NDD	NDD	NDD	NDD
11	NDD	PTI/IPA/NDD	NDD	NDD	NDD
12	NDD	NDD	NDD	NDD	SAI*
13	NDD	NDD	NDD	NDD	NDD
18	NDD	NDD	NDD	NDD	NDD
19	NDD	NDD	NDD	NDD	NDD
20	NDD	WII/PTI/IPA NDD	NDD	NDD	NDD
21	NDD	NDD	NDD	NDD	SAI*
24	NDD	PTI/IPA/NDD	NDD	NDD	NDD
62	NDD	NDD	NDD	NDD	SGI/CBH

Pen #	Axial TOFD Channel 1	Circ TOFD Channel 2	Delta Channel 3	2.25 MHz 0°	Supplementary Tube ID ECT
63	NDD	NDD	NDD	NDD	NDD
65	NDD	PTI/IPA/NDD	NDD	NDD	NDD
75	NDD	PTI/IPA/NDD	NDD	NDD	SAI*
76	NDD	PTI/IPA/CBH	NDD	NDD	SGI/NDD
77	NDD	NDD	NDD	NDD	NDD
78	NDD	NDD	NDD	NDD	NDD

* Acceptable by evaluation using WCAP-14118-P, Rev. 7 and Westinghouse letter AEP- 04-62, dated October 25, 2004.

3.2 Gapscanner Trinity Probe Examination Results

The following table provides a summary of the results of the examinations of sixty one penetration tubes examined from the ID using the Gapscanner end effector with Trinity probes.

Pen #	PCS24 TOFD	0° 2.25 MHz	0° Leak Path	Supplementary Eddy Current Tube ID
1	WII/PTI/IPA/ NDD	NDD	NDD	NDD
2	PTI/IPA/NDD	NDD	NDD	NDD
3	PTI/IPA/NDD	NDD	NDD	NDD
4	NDD	NDD	NDD	NDD
5	WII/NDD	NDD	NDD	NDD
6	NDD	NDD	NDD	NDD
7	NDD	NDD	NDD	NDD
8	PTI/IPA/NDD	NDD	NDD	NDD
9	NDD	NDD	NDD	NDD
14	WII/IPA/NDD	NDD	NDD	NDD
15	NDD	NDD	NDD	SAI*
16	WII/NDD	NDD	NDD	NDD
17	PTI/IPA/NDD	NDD	NDD	NDD
22	NDD	NDD	NDD	NDD
23	WII/NDD	NDD	NDD	NDD
25	PTI/IPA/NDD	NDD	NDD	NDD
26	NDD	NDD	NDD	NDD
27	WII/NDD	NDD	NDD	NDD
28	PTI/IPA/NDD	NDD	NDD	NDD
29	NDD	NDD	NDD	NDD
30	NDD	NDD	NDD	NDD
31	PTI/IPA/NDD	NDD	NDD	NDD
32	WII/PTI/NDD	NDD	NDD	NDD

Pen #	PCS24 TOFD	0° 2.25 MHz	0° Leak Path	Supplementary Eddy Current Tube ID
33	NDD	NDD	NDD	NDD
34	PTI/IPA/NDD	NDD	NDD	NDD
35	PTI/IPA/NDD	NDD	NDD	NDD
36	PTI/IPA/NDD	NDD	NDD	NDD
37	PTI/IPA/NDD	NDD	NDD	NDD
38	WII/IPA/NDD	NDD	NDD	NDD
39	PTI/IPA/NDD	NDD	NDD	NDD
40	NDD	NDD	NDD	NDD
41	NDD	NDD	NDD	SGI/NDD
42	NDD	NDD	NDD	NDD
44	NDD	NDD	NDD	NDD
45	WII/PTI/NDD	NDD	NDD	NDD
46	WII/PTI/NDD	NDD	NDD	NDD
47	NDD	NDD	NDD	NDD
48	NDD	NDD	NDD	NDD
49	PTI/IPA/NDD	NDD	NDD	NDD
50	NDD	NDD	NDD	NDD
51	WII/NDD	NDD	NDD	NDD
52	NDD	NDD	NDD	NDD
53	PTI/IPA/NDD	NDD	NDD	NDD
54	PTI/IPA/NDD	NDD	NDD	NDD
55	PTI/WII/IPA/ NDD	NDD	NDD	NDD
56	NDD	NDD	NDD	NDD
57	NDD	NDD	NDD	NDD
58	NDD	NDD	NDD	NDD
59	NDD	NDD	NDD	SAI*
60	PTI/IPA/NDD	NDD	NDD	NDD
61	NDD	NDD	NDD	NDD
64	NDD	NDD	NDD	SAI*
66	PTI/WII/NDD	NDD	NDD	NDD
67	PTI/IPA/NDD	NDD	NDD	NDD
68	NDD	NDD	NDD	SAI*
69	PTI/IPA/NDD	NDD	NDD	NDD
70	PTI/WII/NDD	NDD	NDD	NDD
71	PTI/WII/NDD	NDD	NDD	NDD
72	NDD	NDD	NDD	NDD
73	NDD	NDD	NDD	NDD
74	PTI/IPA/LOF NDD	NDD	NDD	SAI*

* Acceptable by evaluation using WCAP-14118-P, Rev. 7 and Westinghouse letter AEP- 04-62, dated October 25, 2004.

3.3 Special Grooveman Eddy Current Examination Results

A special eddy current examination was conducted on the tube and roof area of the OD of penetration 43 using the Grooveman end effector. The table below shows the results of this examination.

Pen	Tube	Roof	400 kHz	100 kHz
43	X	----	NDD	NDD
43	----	X	NDD	NDD

3.4 Special Excavation Probe Examination Results

The following table provides a summary of the examination of penetrations 43 and 74 excavation areas using eddy current sword probes and the Gapscanner end effector.

Pen	400 kHz	200 kHz
43	NDD	NDD
74	NDD	NDD

3.5 Vent Line Eddy Current Examination Results

Vent ID	Vent J-Weld	12 Coil	28 Coil	ET Results
X	----	X	----	SSI/CBH
----	X	----	X	NDD

3.6 Post Repair Examination Results

Pen #	PCS24 TOFD	0° 2.25 MHz	0° Leak Path
74	WII/NDD	NDD	NDD
75	WII/NDD	NDD	NDD

Legend:
CBH – Cleared by History
IPA – Indication Profile Analysis Resolution of Indication
LOF – Lack of Fusion at the tube to weld interface
NDD – No Detectable Defect
PTI – Penetration Tube Indication
SAI/MAI – Single/Multiple Axial Indication
SGI – Surface Geometry Indication
SSI – Surface Scratch Indication
WII – Weld Interface Indication

4.0 EXAMINATION COVERAGE

The configuration of the D. C. Cook Unit 2 CRDM penetration tubes is shown in Figure 1. This figure represents the tube-to-head geometry on the "downhill" side of the tube (0° azimuth of the penetration). The bottom ends of all seventy-eight penetration tubes are threaded on the OD surface and have a 15° chamfer on the ID surface.

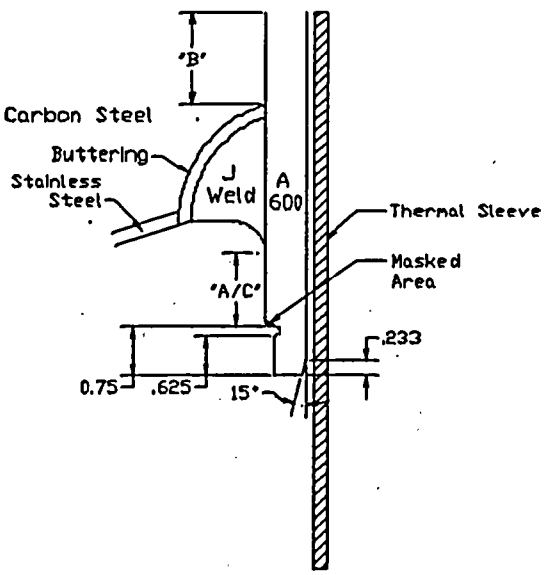

Figure 1

The threads on the OD surfaces extend from the bottom of the tube to an elevation of approximately 0.625" where there is a thread relief machined. The top of the thread relief is 0.750" above the bottom of the tube. The distance from the top of the thread relief to the bottom of the fillet of the J-groove weld (identified as "A/C" in Figure 1) varies based on location of the penetration in the head. These distances are longer for penetrations at "inboard" locations and become progressively shorter for penetrations located further away from the center of the head.

The ID surfaces of the penetration tubes are chamfered at a 15° angle from the bottom of the tube to an elevation of 0.233". The presence of the thread relief results in masking of the propagation of ultrasound to the OD surface of the tube to an elevation of 0.101" above the elevation of the thread relief for axial shooting TOFD probes. In this masked OD region degradation would not be detected until the depth of indications exceeds the depth of the masked area.

The threads on the tube OD surfaces and chamfer on the ID surfaces represent geometric conditions which limit examination coverage near the bottom of the tubes.

For ID examinations of all 78 penetration tubes the TOFD PCS24 examination coverage extended from the uppermost elevation of the chamfer (0.233" from the bottom of the tube plus half of the PCS) for axial shooting probes to elevations at least 2.0" above the weld (identified as "B" in Figure 1). For circumferential shooting TOFD PCS24 probes the examination coverage extended from the uppermost elevation of the chamfer (0.233" from the bottom of the tube plus half of the probe diameter) to elevations at least 2.0" above the weld (identified as "B" in Figure 1).

Supplementary eddy current examination coverage extended from the uppermost elevation of the chamfer (0.233" from the bottom of the tube plus half of the probe diameter) to elevations at least 2.0" above the weld. The extent of coverage was verified for each penetration by confirmation that 1) tube entry signals were evident and 2) scan coverage elevations were in excess of 2.0" above the uppermost elevation of each weld.

For OD examinations of all 61 sleeved penetration tubes, the TOFD PCS24 transducer coverage extended from 0.851" (for Gap Scanner examination) above the end of the tube to elevations at least 2.0" above the uppermost elevation of each weld (Figure 2). For the other 16 penetration tubes the TOFD PCS24 transducer coverage extended from the uppermost elevation of the chamfer (0.233" from the bottom of the tube plus half of the probe diameter) to elevations at least 2.0" above the uppermost elevation of each weld (Figure 3). From the thread relief to the chamfer region the UT coverage from the ID equals 0.406" in depth. The extent of coverage was verified for each penetration by confirmation that: 1) TOFD ultrasonic signals from the thread relief and thread area were evident and 2) scan coverage elevations were in excess of 2.0" above the uppermost elevation of each weld.

D.C. COOK UNIT 2 INSPECTION COVERAGE

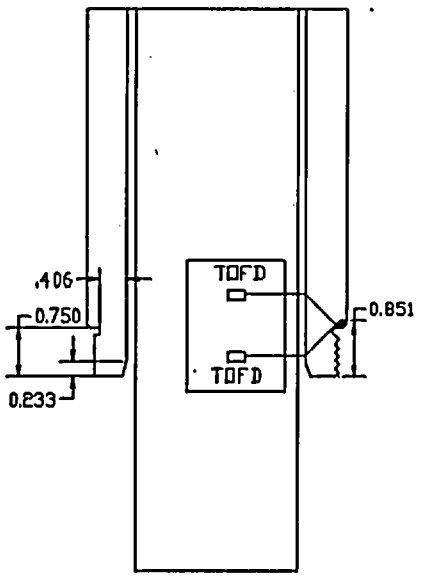

FIGURE 2

FOR SLEEVED PENETRATIONS

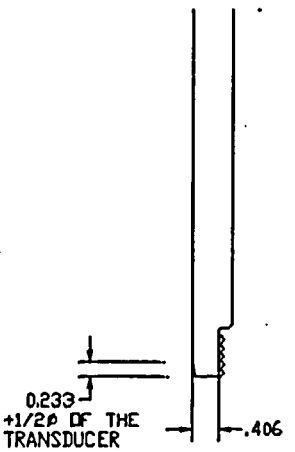

FIGURE 3

FOR NON-SLEEVED PENETRATIONS

5.0 DISCUSSION OF RESULTS

Results from the nondestructive examinations of the 78 reactor vessel head penetrations, the vent line tube and vent line weld are presented in the previous tables. Details for each examination performed on each penetration are found in Volume 2 of this report.

ATTACHMENT 2 TO AEP:NRC:4054-11

SUMMARY REPORT
BARE-METAL VISUAL EXAMINATION OF THE DONALD C. COOK NUCLEAR PLANT UNIT 2 REACTOR PRESSURE VESSEL UPPER HEAD

A bare-metal visual examination of the Donald C. Cook Nuclear Plant (CNP) Unit 2 reactor pressure vessel (RPV) head was conducted during the refueling outage that ended November 9, 2004. This inspection was required by Sections IV.C(1) and IV.C(5)(a) of Nuclear Regulatory Commission (NRC) Order EA-03-009, "Issuance of First Revised NRC Order (EA-03-009) Establishing Interim Inspection Requirements for Reactor Pressure Vessel Heads at Pressurized Water Reactors," dated February 20, 2004. Contractor personnel in conjunction with CNP personnel conducted the examination. A remotely operated crawler with multiple cameras was used to examine 360 degrees around each of the 79 RPV head penetrations. A bare-metal visual examination of 100 percent of the RPV head was also performed. The inspection did not identify any evidence of leakage or base metal wastage.

ATTACHMENT 3 TO AEP:NRC:4054-11

SUMMARY REPORT
BOTTOM MOUNTED INSTRUMENTATION PENETRATION INSPECTION OF THE DONALD C. COOK NUCLEAR PLANT UNIT 2 REACTOR PRESSURE VESSEL LOWER HEAD

A visual inspection of the Donald C. Cook Nuclear Plant (CNP) Unit 2 bottom mounted instrumentation (BMI) nozzle penetrations was completed during the Unit 2 Cycle 15 refueling outage that ended November 9, 2004. This inspection was completed in accordance with Indiana Michigan Power Company's commitment made in response to Nuclear Regulatory Commission Bulletin 2003-02, "Leakage from Reactor Pressure Vessel Lower Head Penetrations and Reactor Coolant Pressure Boundary Integrity," dated August 21, 2003.

The inspection was conducted by CNP Performance Verification personnel qualified as Level 2 examiners. A pole mounted, alternating current powered camera was used to perform a VT-2 examination to VT-3 examination criteria on all 58 Unit 2 Reactor Pressure Vessel (RPV) BMI nozzle penetrations, including 360 degrees around each BMI penetration. No boric acid deposits were found at any RPV BMI nozzle penetration or anywhere on the RPV bottom head surface area. No boric acid residue sampling or analysis was required or performed. The as-found condition of the Unit 2 RPV bottom head was identical to the as-left condition following the bottom head cleaning performed during the Unit 2 Cycle 14 refueling outage. No indications of through-wall leakage were found during the Unit 2 Cycle 15 RPV BMI inspection. The bottom two sections of insulation were lowered to allow unobstructed access to all penetrations and the membrane areas of the lower reactor vessel. The inspection results were saved to computer drives as video clips.