

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Report No: 50-316/85027(DRS)

Docket No. 50-316

License No. DPR-74

Licensee: American Electric Power Service Corporation
Indiana & Michigan Power Company
1 Riverside Plaza
Columbus, Ohio 43216

Facility Name: D. C. Cook Nuclear Power Plant, Unit 2

Inspection At: D. C. Cook Site, Bridgman, Michigan

Inspection Conducted: September 6, 19-20, 25-26, 1985

Inspector: *D. B. Jones*
D. B. Jones

10/7/85
Date

Approved By: *D. H. Danielson*
D. H. Danielson, Chief
Materials and Processes Section

10/7/85
Date

Inspection Summary

Inspection on September 6, 19-20, 25-26, 1985 (Report No. 50-316/85027(DRS))

Areas Inspected: Routine, unannounced inspection of procedures, work activities, NDE personnel certifications and data related to leakage evaluation and eddy current examination of Unit 2 steam generators. This inspection involved a total of 30 inspector-hours onsite by one NRC inspector.

Results: No violations or deviations were identified.

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DETAILS

1. Persons Contacted

Indiana & Michigan Electric Company (I&M)

- *A. Blind, Assistant Plant Manager, Maintenance
- *J. Stietzel, QC Superintendent
- *R. Otte, ISI Supervisor
- R. Tella, Performance Engineer, Maintenance Engineering
- B. Burke, Performance Engineer, Maintenance Engineering

American Electric Power Service Corporation (AEPSC)

- *M. Evarts, Licensing Engineer

Westinghouse (W)

- E. Belizar, eddy current Coordinator
- B. Kent, Shift Supervisor
- J. Divela, Lead Analyst

Babcock & Wilcox (B&W)

- D. Cislo, Site Coordinator
- R. Fisher, Shift Supervisor

The inspector also contacted and interviewed other licensee and contractor employees.

*Denotes those present at the exit interview.

2. Leakage Evaluation and Eddy Current Examination of Unit 2 Steam Generators

a. General Information

On July 16, 1985, Unit 2 was shutdown to investigate primary-to-secondary system leakage and as a result two tubes were plugged in S/G 23. Shortly after synchronizing the unit on August 2, 1985, and commencing power increase, primary-to-secondary leak indications in the No. 23 S/G recurred. Subsequently, approximately 1,552 tubes were eddy current inspected full-length and 35 tubes were plugged. On August 24, 1985, Unit 2 was again shut down, for the third time, to investigate primary-to-secondary leakage, which was visible in S/Gs 22 and 24. The leakage did not exceed Technical Specification limits.

Indiana and Michigan Electric Company (I&M) decided to perform 100% eddy current examination on Unit 2 S/Gs 21, 22, 24, and the remaining tubes in S/G 23 that had not been tested during the July and August shutdowns.

I&M contracted with Westinghouse (W) to perform the steam generator eddy current examination and tube pulling and with Babcock and Wilcox (B&W) to perform the tube plugging. The eddy current examination was performed in accordance with ASME Code Section XI, 1980 Edition, Winter 1981 Addenda.

Eddy current examination was performed on steam generators 21, 22, 23 and 24, and the following tubes were plugged:

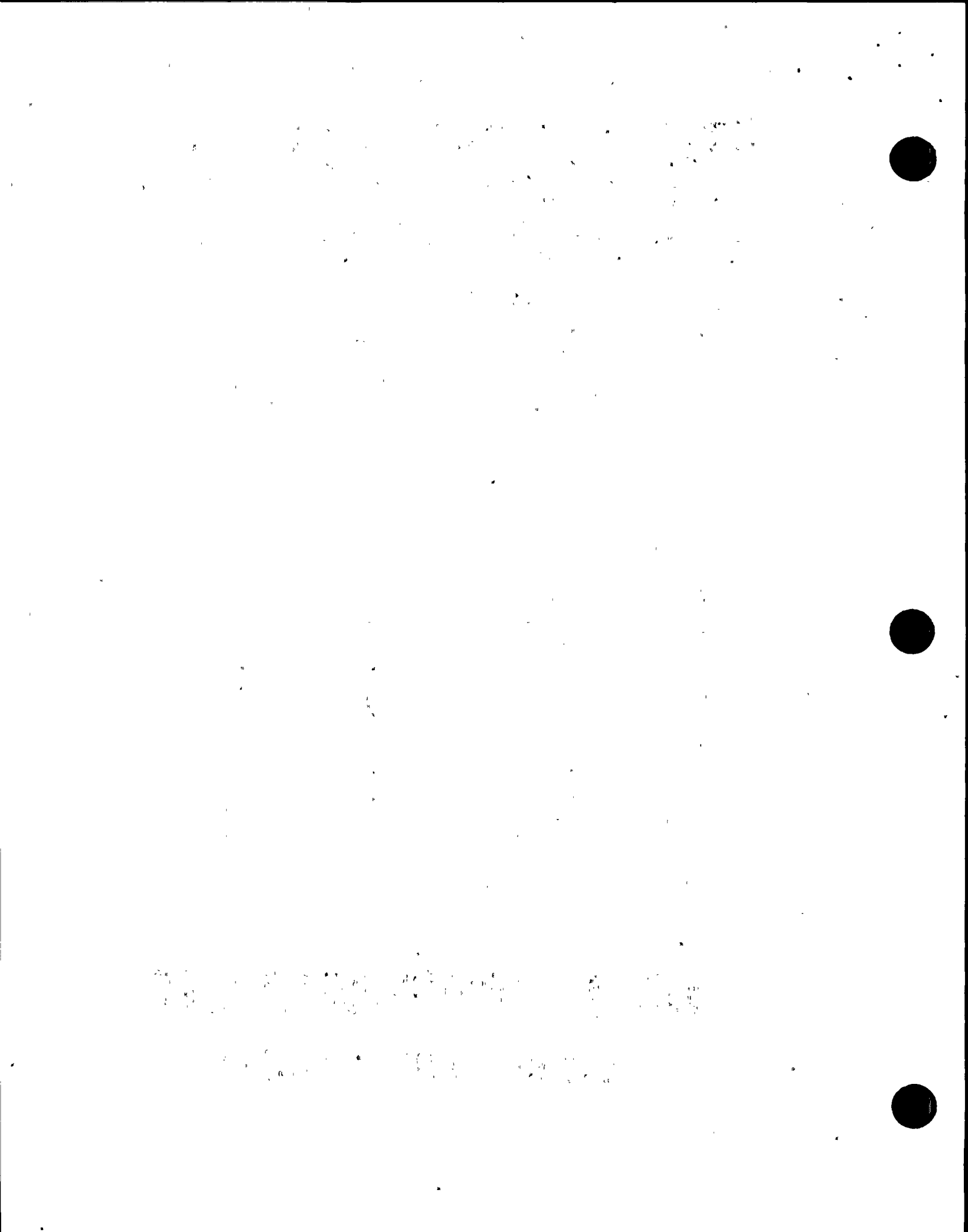
Steam Generator No. 21

<u>Row</u>	<u>Column</u>	<u>Row</u>	<u>Column</u>
5	71	16	35
7	18	16	41
10	36	17	34
11	15	20	13
11	49	21	45
13	14	25	21
15	45	36	19
16	32		

Steam Generator No. 22

<u>Row</u>	<u>Column</u>	<u>Row</u>	<u>Column</u>
3	15	16	29
4	19	16	47
6	67	16	57
11	55	17	71
11	59	18	46
11	61	18	71
12	42*	19	33
12	57	19	46
13	57	20	31
14	41	25	51
14	61	27	54
15	61	28	50
16	10	45	37

*Tube pulled for analysis



Steam Generator No. 23

<u>Row</u>	<u>Column</u>	<u>Row</u>	<u>Column</u>
3	20	32	20
4	11	37	30
6	8	38	23
24	35	40	34
28	19	41	27
31	22	41	46

Steam Generator No. 24

<u>Row</u>	<u>Column</u>	<u>Row</u>	<u>Column</u>
3	24	18	67
4	49	18	70
6	19	19	52
7	94	19	56
8	53	19	58
9	65	19	60
10	56	19	61
10	57	19	63
11	57	19	64
12	55	19	67
12	57	19	75
13	55	19	81
13	63	20	11
14	22	20	63
14	57	20	65
15	53	20	66
15	63	20	67
16	54	21	66
16	60	21	72
16	65	22	59
16	66	23	56
17	55	23	59
17	65	30	54
18	61	33	28
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The following tubes were pulled from S/G 22 for analysis:

<u>Row</u>	<u>Column</u>
12	42
11	25
7	38
6	40
18	77

b. Procedure Review

The inspector reviewed the following procedures:

- W, Hands-On Lower Hard Roll Tool, AEA-327(81), Revision 4
- W, Installation and Removal of Temporary Nozzle Covers, MRS 2.2.2 Gen-2, Revision 6
- W, Steam Generator Tubesheet Marking, MRS 2.2.2 Gen-12, Revision 1
- W, Installation and Removal of Eddy Current Positioning Devices, MRS 2.4.2 Gen-19, Revision 2
- W, Digital Multi-Frequency Eddy Current Inspection of Preservice and Inservice Heat Exchanger Tubing, MRS 2.4.2 Gen-28, Revision 0
- W, Remotely Operated Service Arm (ROSA) Series 51 S/G Operating Procedure, P-SE-ATS-84-043, Revision 0
- W, Control of Field Service Activities, OPR 610-3, Revision 3
- W, "Hands-On" Machining of Steam Generator Tubes, MRS 2.3.2 Gen-14, Revision 4
- W, S/G Primary Side Tube Removal, MRS 2.3.2 Gen-3, Revision 10
- W, Weld Repair of Steam Generator Tubes/Plugs, MRS 2.3.2 Gen-6, Revision 5
- W, Steam Generator Barehole/Tube Plugging by Gas Tungsten Arc Welding, WEP 221, Revision A
- W, Tube/Bare Hole Plugging Steam Generators with a Thimble Plug - Automatic Gas Tungsten Arc Welding (GTAW) - Autogenous, WQS 7901, Revision 0
- W, Automatic Gas Tungsten Arc Welding (GTAW) - Autogenous, WPS 7907, Revision 0
- W, Gas Tungsten Arc Welding (GTAW), WPS 6907, Revision A
- W, Weld Repair of Steam Generator Tubes/Plugs Using ROSA, W-NSID-SAE-SGSE-FP-73(84), Revision 0, FCR 001
- W, Examination of Steam Generator Tubes/Explosive Plugs Repaired by Welding per MRS 2.3.2 Gen-6, QAIP-1-VT, Revision 3
- B&W, Operating Instructions - ROGER Manipulator Computer System, 1147815, Revision 1
- B&W, Setup and Teardown Instructions for ROGER, 1149677, Revision 0
- B&W, Setup and Teardown Instruction for RSG W-51 Mast and Arm, 1151412, Revision 0
- B&W, Installation and Removal Instructions for RSG W-51 Mast and Arm, 1151413, Revision 1

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B&W, Remote Manual Tube End Repair, 1157873, Revision 1
B&W, Manual Marking of RSG Tube Locations, 1151423, Revision 1
B&W, RSG Tube Plugging with Mechanical Roll Plugs, 1151806,
Revision 4
B&W, Roll Plug Removal Tooling-OI, 1151811, Revision 0
B&W, Roll Expansion Tool Setup, Maintenance and OI for
Remote and Manual Roll Plug Installation, 1151810,
Revision 0
B&W, Tooling for Installation and Removal of Mechanical
Plugs in .875 OD Tubes, 1146405, Revision 2

No violations or deviations were identified.

c. Material and Equipment Certification

The inspector reviewed the certification documents relative to the following items:

- (1) Eddy current equipment
- (2) ROSA mechanical plugging equipment

No violations or deviations were identified.

d. NDE Personnel Certifications and Observation of Work Activities

The inspector reviewed NDE personnel certifications in accordance with SNT-TC-1A, 1975/1980 Editions.

The inspector also observed and had discussions with personnel during the following work activities:

Eddy current examination of S/G 24, Row 3 - Columns 52-58 and Row 2 - Columns 52-54 and 57. The examination was performed in accordance with Westinghouse Procedure MRS 2.4.2 Gen-28, Revision 0, "Digital Multi-Frequency Eddy Current Inspection of Preservice and Inservice Heat Exchanger Tubing."

Tube-plugging of S/G 24, Row 3 - Column 24, Row 14 - Column 22, Row 6 - Column 19 and Row 20 - Column 11. The tube plugging was performed in accordance with Babcock & Wilcox Procedure 1151806, Revision 4, "RSG Tube Plugging with Mechanical Roll Plugs."

No violations or deviations were identified.

3. Exit Interview

The Region III inspector met with the licensee representatives (denoted in Paragraph 1) at the conclusion of the inspection on September 26, 1985. The inspector summarized the purpose and findings of the inspection. The



licensee representatives acknowledged this information. The inspector also discussed the likely informational content of the inspection report with regard to documents or processes reviewed during the inspection. The licensee representatives did not identify any such documents/processes as proprietary.