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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 Units 1 and 2  
2002 ANNUAL OPERATING REPORT

Technical Specifications 6.9.1.4 and 6.9.1.5 of Appendix A to the Donald C. Cook Nuclear Plant Unit 1 and Unit 2 Operating Licenses require that an annual report be submitted to address personnel exposure, steam generator in-service inspection results, challenges to power-operated relief and safety valves, and information regarding any instances when the I-131 specific activity limit was exceeded. Consistent with these requirements, a copy of the 2002 annual operating report is attached

There are no new commitments in this submittal. Should you have any questions, please contact Mr. Brian A. McIntyre, Manager of Regulatory Affairs, at (269) 697-5806.

Sincerely,

A handwritten signature in black ink, appearing to read 'S. A. Greenlee', with a large, stylized flourish at the end.

S. A. Greenlee  
Director of Nuclear Technical Services

DB/rdw

Attachment

A001  
IE56

c: K. D. Curry, Ft. Wayne AEP, w/o attachment  
J. E. Dyer, NRC Region III  
J. T. King, MPSC, w/o attachment  
MDEQ – DW & RPD, w/o attachment  
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bc: A. C. Bakken III, w/o attachment  
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J. E. Newmiller  
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M. K. Scarpello, w/o attachment  
T. K. Woods, w/o attachment

## ATTACHMENT TO AEP:NRC:3691-01

### 2002 Annual Operating Report

#### 1.0 INTRODUCTION

##### Plant Description

Indiana Michigan Power Company is the licensee for Donald C. Cook Nuclear Plant. The plant is located north of Bridgman, Michigan. The plant consists of two nuclear units employing a Westinghouse pressurized water reactor nuclear steam supply system. Each reactor unit employs an ice condenser reactor containment system. The American Electric Power Service Corporation is the architect-engineer and constructor.

Unit 1 and 2 reactor licensed power levels are 3304 Mwt and 3411 Mwt, respectively. The main condenser cooling method is open cycle using Lake Michigan water as the cooling source for each unit.

#### 2.0 PERSONNEL RADIATION EXPOSURE SUMMARY

Page 2 of this attachment provides the number of station, utility, and contractor/other personnel receiving exposures greater than 100 millirem (mrem) in 2002. This estimated dose is based on electronic dosimetry and reported in the format specified by Regulatory Guide 1.16.

The values shown in the individual categories (routine maintenance, etc.) represent the number of people who received greater than 100 mrem in that particular category. The grand total figure represents the total number of people who received 100 mrem, whether in one of the categories or multiple categories. A specific person could receive dose in two or more categories, but they would be counted only once in the grand total. Also, a specific person could receive less than 100 mrem in several categories, but have a total dose greater than 100 mrem. As a result, the sum of the individual category totals does not necessarily equal the grand total.

**Reg Guide 1.16 Report**  
**INDIANA MICHIGAN POWER / COOK NUCLEAR PLANT**  
 Prepared for Year 2002

Number of Personnel and Person-Rem By Work and Job Function

	<u>Number of Personnel &gt; 100 mrem</u>			<u>Total Person-Rem</u>		
	<u>Station Employees</u>	<u>Utility Employees</u>	<u>Contractors and Others</u>	<u>Station Employees</u>	<u>Utility Employees</u>	<u>Contractors and Others</u>
Reactor Operation & Surveillance						
-Maintenance	11	6	1	2 952	1 279	1.085
-Operations	2	0	0	2 502	0.000	0 314
-Health Physics	0	0	0	0 139	0 001	0.012
-Supervisory	0	0	0	0 010	0 000	0.012
-Engineering	1	0	2	0 468	0 006	0.381
Routine Maintenance						
-Maintenance	1	0	1	2 306	0 043	1.269
-Operations	0	0	0	1.083	0 002	0 083
-Health Physics	9	0	0	3 004	0 006	0 278
-Supervisory	0	0	0	0 020	0.000	0 007
-Engineering	0	0	0	0 227	0 003	0.183
Inservice Inspection						
-Maintenance	3	0	103	1 276	0.000	34.565
-Operations	3	0	3	1.399	0 000	1.696
-Health Physics	9	0	8	3.271	0 045	4.105
-Supervisory	0	0	2	0 000	0 000	1.112
-Engineering	0	0	46	0.097	0.000	24 751
Special Maintenance						
-Maintenance	5	0	27	1.822	0.000	12 069
-Operations	0	0	0	0.107	0.000	0 046
-Health Physics	2	0	2	0.491	0.000	0.342
-Supervisory	0	0	0	0.002	0.000	0 016
-Engineering	1	0	0	0.176	0.000	0 304
Waste Processing						
-Maintenance	0	0	0	0.092	0.006	0 217
-Operations	0	0	1	0.108	0.000	0 198
-Health Physics	3	0	1	1.509	0.000	0 435
-Supervisory	0	0	0	0 009	0 000	0 000
-Engineering	0	0	0	0 030	0 001	0 002
Refueling						
-Maintenance	61	1	310	15 674	0 478	105.795
-Operations	37	0	22	13.547	0 009	7.419
-Health Physics	30	0	59	14.147	0 040	23.138
-Supervisory	4	0	2	0 987	0.000	0.666
-Engineering	9	0	5	3 068	0 019	2.063
Totals						
-Maintenance	82	7	436	24.123	1.808	155 002
-Operations	56	0	26	18.746	0.011	9 756
-Health Physics	41	0	65	22.560	0.093	28 309
-Supervisory	4	0	4	1.028	0.000	1.813
-Engineering	11	0	52	4.066	0.029	27.684
<b>Grand Totals</b>	<b>194</b>	<b>7</b>	<b>583</b>	<b>70.523</b>	<b>1.941</b>	<b>222.563</b>

### 3.0 STEAM GENERATOR INSPECTIONS

#### Acronym Listing

TW	Thru-Wall
07H, 04C	Support Plate Location corresponding to 7 <sup>th</sup> hot leg support, 4 <sup>th</sup> cold leg support, etc.
BLG	Bulge
EPRI	Electric Power Research Institute
FSH	Free Span History
INR	Indication Not Reportable
MBH	Manufacturing Burnish Mark History
MBI	Manufacturing Burnish Mark Indication
MBM	Manufacturing Burnish Mark
NDF	No Degradation Found
NHE	No Hydraulic Expansion
PLP	Possible Loose Part
PSI	Preservice Inspection
PVN	Permeability Variation
Rxx/Cyy	Tube location coordinate corresponding to Row xx and Column yy
SG	Steam Generator

#### 3.1. Unit 1 Inspection Scope

Eddy current inspection of Unit 1 SGs was performed during May 2002. This was the first in-service examination of the SGs since replacement in December 2000. The inspection scope consisted of a 100 percent full-length bobbin coil examination of the tubes in each of the four SGs. In addition, special examinations were performed in areas of interest using rotating probes to better characterize select bobbin coil signals. The following tables provide a breakdown of the inspections performed.

Base Examination	SG 11 Tubes Examined	SG 12 Tubes Examined	SG 13 Tubes Examined	SG 14 Tubes Examined
Bobbin - Full Length	3496	3496	3496	3496

Special Interest – Rotating Coil	SG 11 Tubes/Locations Examined	SG 12 Tubes/Locations Examined	SG 13 Tubes/Locations Examined	SG 14 Tubes/Locations Examined
Bobbin Signal Diagnostics (MBI)	2/3	0/0	1/1 <sup>1</sup>	1/1
Ding/Dent	0/0	0/0	0/0	1/1
20 percent MBH	12/12	10/10	29/36	14/20
PLP & Bounding Expansion	0	0	9/9 <sup>2</sup>	0

1. Rotating coil examination of this indication was waived based upon similarity to other MBI bobbin coil signals and the decision to administratively plug all the affected tubes.
2. Bobbin PLP indication and surround tubes examined from the hot leg tubesheet top to the first hot leg support

### 3.1.1 Inspection Results

The following table and associated discussion summarizes the reported indications found during the inspection.

Indication	Test	SG 11	SG 12	SG 13	SG 14
Ding	Bobbin	0	1	0	4
Dent	Bobbin	0	0	1	0
MBH	Bobbin	56	48	176	88
MBI	Bobbin	3	0	1	1
MBM	Rotating	9	7	30	16
PLP	Rotating	0	0	1	0
Less than 20 percent TW	Bobbin	0	0	0	1
Greater than or equal to 20 percent TW	Bobbin	0	0	0	0

#### Ding/Dent

A combined total of one dent (tubing diameter less than nominal at a support) and five dings (tubing diameter less than nominal in the freespan tubing) were reported using a two volt criteria during the bobbin coil examination. A sample of the reported locations was examined with a rotating coil with NDF.

### Manufacturing Burnish Marks (MBM/MBI/MBH)

A small population of MBH indications was found in each SG as noted in the above table. Samples of the MBH indications reported during the bobbin coil examination were examined with a rotating coil. The results of this examination revealed the presence of either NDF or MBM at the examined location. No degradation was found to be associated with any of the reported MBH indications.

Four tubes (five indications) were reported as MBIs during the bobbin coil examination. Note that the difference between an MBI and an MBH is that an MBH is present during the original baseline examination and basically exhibits little to no change in signal characteristics. An MBI is either not present in the original baseline examination or is present but exhibits significant change in signal characteristics. During the in-service bobbin coil examination the subject indications were found to have changed in amplitude anywhere from 1.0 to 2.5 volts. Rotating coil examination revealed no material loss and no identifiable form of degradation in the area of interest. The four impacted tubes were preventatively plugged due to the unexplained signal change. Subsequent review of the indications by EPRI noted that they were characteristic of benign signals originating from tube buffing operations following thermal treatment during the original manufacturing process.

### Possible Loose Part

Tube R3/C23 in SG 13 was reported as having a possible loose part indication located approximately 6.62 inches above the hot leg top of tubesheet. The indication was reported during the bobbin coil examination with subsequent rotating coil exams being performed for indication confirmation. This tube and eight additional tubes in the surrounding area were examined with a rotating coil. The results of the rotating exam were more indicative of a sludge deposit/scaling than a loose part. Neither the eddy current nor subsequent secondary side inspections identified any loose parts or degradation in any of the tubes.

### Tube Wear (less than 20 percent)

Tube R53/C53 in SG 14 had confirmed wear at the fan bar 5 plus 0.61 inches support location. The bobbin coil TW depth measurement for this indication measured 8 percent TW. As the wear depth was well below the Technical Specification repair limit of 40 percent TW, the tube was left in service. There were no additional wear indications reported in any SG.

### 3.1.2 Plugged Tubes

As discussed in Section 3.1.1 above, four tubes were preventatively plugged due to unexplained signal changes. The impacted tube and associated indication information is provided in the table below.

SG	Tube ID	Indication
SG 11	R16/C40	MBI @ 5 <sup>th</sup> cold leg support plus 37.06 inches MBI @ 6 <sup>th</sup> cold leg support plus 34.48 inches
SG 11	R13/C85	MBI @ tube sheet cold plus 14.97 inches
SG 13	R19/C61	MBI @ 6 <sup>th</sup> cold leg support plus 19.45 inches
SG 14	R69/C45	MBI @ 1 <sup>st</sup> cold leg support plus 12.06 inches

### 3.2. Unit 2 Inspection Scope

An eddy current inspection of the Unit 2 SGs was performed in January - February of 2002. The base inspection scope consisted of a 50 percent full-length bobbin coil examination of the tubes in each of the four SGs. Ubends (07H-07C) of Rows 1 and 2 were not examined with the standard 720 bobbin coil probe due to potential difficulty in transversing across the low row ubends. A smaller diameter bobbin coil probe could not be used in this application as such a probe has insufficient fill factor to be qualified for that area of the tubing. As a result, a sample inspection using rotating coils was performed on 100 percent of the Row 1 and 2 in-service tubes in one SG.

In addition, special interest examinations were performed in areas of interest using rotating probes to better characterize select bobbin coil signals. Rotating inspections were also performed in areas of interest (e.g. hot leg top of tubesheet and in service Row 1 and 2 tubes in select SGs). The following tables provide a breakdown of the inspections performed.

Base Examination	SG 21 Tubes Examined	SG 22 Tubes Examined	SG 23 Tubes Examined	SG 24 Tubes Examined
Bobbin – Full Length	1796	1796	1796	1796

Special Interest – Rotating Coil	SG 21 Tubes/Locations Examined	SG 22 Tubes/Locations Examined	SG 23 Tubes/Locations Examined	SG 24 Tubes/Locations Examined
Bobbin Signal Diagnostics (MBH, MBM, Ding, Dent, PVN)	17/22	13/13	8/11	22/23
Bobbin – NHE	0/0	2/2	2/2	0/0

Rotating Examination	SG 21 Tubes Examined	SG 22 Tubes Examined	SG 23 Tubes Examined	SG 24 Tubes Examined
20 percent Hot Leg Top of Tubesheet - (plus/minus 3")	720	0	0	0
PLP & Bounding Expansion (various)	15	0	0	0
In-service Low Row Ubends – (07H-07C)	0	0	190	0

### 3.2.1 Inspection Results

The following table and associated discussion summarizes the reported indications found during the inspection.

Indication	Test	SG 21	SG 22	SG 23	SG 24
BLG	Bobbin	1	0	0	2
Ding	Bobbin	72	30	19	61
Dent	Bobbin	4	12	21	2
FSH	Bobbin	0	1	0	0
MBH	Bobbin	18	11	10	23
MBI*	Bobbin	0	0	1	4
MBM	Rotating	0	0	1	4
NHE	Bobbin	0	2	2	0

Indication	Test	SG 21	SG 22	SG 23	SG 24
PLP	Rotating	5	0	0	0
PVN	Bobbin	1	0	0	1
Less than 20 percent TW	Bobbin	1	0	0	0
Greater than or equal to 20 percent TW	Bobbin	0	0	0	0

\* All MBI indications were examined with a rotating coil and confirmed as MBMs.

### Dent/Ding

A combined total of 39 dents and 182 dings were reported using a 2-volt criterion during the bobbin coil examination. A 20 percent sample of the reported dent/ding locations was examined with a rotating coil. No degradation was detected at any of the dent/ding locations.

### No Hydraulic Expansion

A total of four tubes were reported as not having a hydraulically expanded tubesheet region. SG 22 had two tubes not fully expanded in the cold leg tubesheet while SG 23 had two tubes not fully expanded in the hot leg tubesheet. All four tubes were examined for the full length of the tubesheet with a rotating coil. No degradation was detected in any of the non-expanded areas of these tubes. Following consultation with the SG manufacturer and review by Design Engineering, the tubes were left in service.

### Free Span History/Manufacturing Burnishing Marks (FSH/MBH/MBI/MBM)

A small population of freespan indications was noted during the bobbin coil examination. Indications were compared with original baseline data and those found to have experienced insignificant change were reported as FSH or MBH. Indications that could not be reviewed in the original baseline or exhibited significant change were called MBI. SG 23 had one MBI indication and SG 24 had four MBI indications. All of the MBI indications were subsequently examined with a rotating coil and the results of the examination revealed the presence of MBMs at the examined location. No degradation was found to be associated with any of these indications.

In addition, a 20 percent sample of the reported MBH and FSH indications were examined using a rotating coil. No degradation was noted during these enhanced examinations.

### Possible Loose Parts

A total of five tubes were reported as having PLP indications above the hot leg top of tubesheet in SG 21. Three of the reported indications (R22/C50, R23/C50, & R42/C50) were detected during the planned rotating coil examination of the top of the tubesheet. The other two indications (R41/C51 & R42/C51) were found during a 15-tube expansion program. Visual inspection of tubes R22/C50 and R23/C50 revealed a sludge rock affixed to the tubes. The visual inspection performed on tubes R42/C50, R41/C51, and R42/C51 revealed a loose part in the vicinity of these tubes. The sludge rock was left in place because it is softer than the tubes and cannot cause any damage, while the loose part was removed. There was no degradation detected in any of the tubes with the reported PLP indications.

### Tube Wear (less than 20 percent)

Tube R6/C53 in SG 21 had confirmed wear at the 6<sup>th</sup> hot leg support minus 0.60 inches location. The bobbin coil TW depth measurement for this indication measured 9 percent TW. The indication was also examined with a rotating coil, which confirmed wear at the edge of the support less than 10 percent. This indication was previously reported and confirmed as less than 10 percent wear during the last (1997) inspection. As the indicated depth was well below the Technical Specification repair limit of 40 percent TW, the tube was left in service.

Three other previously reported (1997) and confirmed low level (less than 10 percent) support plate wear indications were initially reported as INR during this outage due to the small amplitude and indiscernible signal response observed during the bobbin coil examination performed on the tubes. These indications were all located in SG 21 at the designated support locations: R6/C53 (5H) and R5/C54 (5H & 4H). The indications were ultimately reported as 0 percent TW to allow for ease of identification for future examination.

### 3.2.2 Plugged Tubes

No tubes were plugged in any of the four SGs during the 2002 Unit 2 inspection

## 4.0 CHALLENGES TO PRESSURIZER POWER OPERATED RELIEF VALVES (PORVs) AND SAFETY VALVES

There were no challenges to the pressurizer PORVs or the pressurizer safety valves on either Unit 1 or Unit 2.

**5.0 REACTOR COOLANT SPECIFIC ACTIVITY**

There were no instances in which the reactor coolant dose equivalent I-131 specific activity exceeded the limits of Technical Specification 3.4.8 (greater than or equal to 1  $\mu\text{Ci/g}$ ) in either Unit 1 or Unit 2. Compliance was determined by routine gamma spectrometry analysis of reactor coolant.