INDIANA MICHIGAN POWER®
A unit of American Electric Power

Indiana Michigan Power
Cook Nuclear Plant
One Cook Place
Bridgman, MI 49106
IndianaMichiganPower.com

September 9, 2016

AEP-NRC-2016-74
10 CFR 50.73

Docket No.: 50-315

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
11555 Rockville Pike
Rockville, MD 20852

Donald C. Cook Nuclear Plant Unit 1
LICENSEE EVENT REPORT 315/2016-002-00
Rod Position Indication Inoperable Longer Than Allowed by Technical Specifications

In accordance with 10 CFR 50.73, Licensee Event Report (LER) System, Indiana Michigan Power Company, the licensee for Donald C. Cook Nuclear Plant Unit 1, is submitting as an enclosure to this letter the following report:

LER 315/2016-002-00: Rod Position Indication Inoperable Longer Than Allowed by Technical Specifications

There are no commitments contained in this submittal.

Should you have any questions, please contact Mr. Michael K. Scarpello, Regulatory Affairs Manager, at (269) 466-2649.

Sincerely,

Q. Shane Lies
Site Vice President

MPH/mll

Enclosure: LER 315/2016-002-00: Rod Position Indication Inoperable Longer Than Allowed by Technical Specifications

IE22
NRR

c: R. J. Ancona – MPSC
A. W. Dietrich – NRC Washington, DC
MDEQ – RMD/RPS
NRC Resident Inspector
C. D. Pederson – NRC Region III
A. J. Williamson – AEP Ft. Wayne

Enclosure to AEP-NRC-2016-74

LER 315/2016-002-00:
Rod Position Indication Inoperable Longer Than Allowed by Technical Specifications

NRC FORM 366 (11-2015) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB: NO. 3150-0104 EXPIRES: 10/31/2018

Estimated burden per response to comply with this mandatory collection request: 80 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the FOIA, Privacy and Information Collections Branch (T-5 F53), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to Infocollects.Resource@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

LICENSEE EVENT REPORT (LER)

(See Page 2 for required number of digits/characters for each block)

1. FACILITY NAME	2. DOCKET NUMBER	3. PAGE
Donald C. Cook Nuclear Plant Unit 1	05000315	1 OF 3

4. TITLE

Rod Position Indication Inoperable Longer Than Allowed by Technical Specifications

5. EVENT DATE			6. LER NUMBER			7. REPORT DATE			8. OTHER FACILITIES INVOLVED	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO.	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
07	15	2016	2016	002	00	09	09	2016		05000
									FACILITY NAME	DOCKET NUMBER
										05000

9. OPERATING MODE	11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: *(Check all that apply)*			
1	☐ 20.2201(b)	☐ 20.2203(a)(3)(i)	☐ 50.73(a)(2)(ii)(A)	☐ 50.73(a)(2)(viii)(A)
	☐ 20.2201(d)	☐ 20.2203(a)(3)(ii)	☐ 50.73(a)(2)(ii)(B)	☐ 50.73(a)(2)(viii)(B)
	☐ 20.2203(a)(1)	☐ 20.2203(a)(4)	☐ 50.73(a)(2)(iii)	☐ 50.73(a)(2)(ix)(B)
	☐ 20.2203(a)(2)(i)	☐ 50.36(c)(1)(i)(A)	☐ 50.73(a)(2)(iv)(A)	☐ 50.73(a)(2)(x)
10. POWER LEVEL	☐ 20.2203(a)(2)(ii)	☐ 50.36(c)(1)(ii)(A)	☐ 50.73(a)(2)(v)(A)	☐ 73.71(a)(4)
	☐ 20.2203(a)(2)(iii)	☐ 50.36(c)(2)	☐ 50.73(a)(2)(v)(B)	☐ 73.71(a)(5)
100	☐ 20.2203(a)(2)(iv)	☐ 50.46(a)(3)(ii)	☐ 50.73(a)(2)(v)(C)	☐ 73.77(a)(1)
	☐ 20.2203(a)(2)(v)	☐ 50.73(a)(2)(i)(A)	☐ 50.73(a)(2)(v)(D)	☐ 73.77(a)(2)(i)
	☐ 20.2203(a)(2)(vi)	☒ 50.73(a)(2)(i)(B)	☐ 50.73(a)(2)(vii)	☐ 73.77(a)(2)(ii)
		☐ 50.73(a)(2)(i)(C)	☐ OTHER	Specify in Abstract below or in NRC Form 366A

12. LICENSEE CONTACT FOR THIS LER

LICENSEE CONTACT	TELEPHONE NUMBER *(Include Area Code)*
Michael K. Scarpello, Regulatory Affairs Manager	(269) 466-2649

13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX
X	AA	IMOD	Hurst Technologies, Inc.	Y					

14. SUPPLEMENTAL REPORT EXPECTED	15. EXPECTED SUBMISSION DATE	MONTH	DAY	YEAR
☐ YES *(If yes, complete 15. EXPECTED SUBMISSION DATE)* ☒ NO				

ABSTRACT *(Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines)*

On July 15, 2016, with the Donald C. Cook Nuclear Plant Unit 1 Reactor operating in Mode 1 at 100 percent power, while performing the Unit 1 Full Length Control Rod Operability Surveillance Test, acceptance criteria for Control Bank 'D' was not met. When given an insertion demand of eight steps, Control Rod K14 only indicated inserting one step. All other Rods responded as expected. A further evaluation determined that failure was caused by the apparent saturation of the Analog Rod Position Indication (NARPI) signal conditioning module for Rod K14. The performance of a Temperature Compensation adjustment on the K14 NARPI module on April 30, 2016, saturated the NARPI module and prevented it from responding to rod motion demand. Thus, the K14 NARPI module was inoperable from the moment it was saturated on April 30, 2016, at 2232 until it was replaced and restored to operable status on July 15, 2016, at 1740.

Therefore, the NARPI module for Control Rod K14 was inoperable for a period greater than allowed by Technical Specification 3.1.7, and is being reported pursuant to 10 CFR 50.73(a)(2)(i)(B) for any Operation or Condition Prohibited by Technical Specifications.

NRC FORM 366A (11-2015) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB: NO. 3150-0104 EXPIRES: 10/31/2018

Estimated burden per response to comply with this mandatory collection request: 80 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the FOIA, Privacy and Information Collections Branch (T-5 F53), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to Infocollects.Resource@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

LICENSEE EVENT REPORT (LER) CONTINUATION SHEET

1. FACILITY NAME	2. DOCKET	3. LER NUMBER		
		YEAR	SEQUENTIAL NUMBER	REV NO.
Donald C. Cook Nuclear Plant Unit 1	05000315	2016	002	00

NARRATIVE

INTRODUCTION

On July 15, 2016, with the Donald C. Cook Nuclear Plant Unit 1 Reactor operating in Mode 1 at 100 percent power, while performing the Unit 1 Full Length Control Rod Operability Surveillance Test, acceptance criteria for Control Bank 'D' [AA] was not met. When given an insertion demand of eight steps, Control Rod K14 only indicated inserting one step. All other control rod indications responded as expected. A Past Operability Determination Evaluation was performed that determined the failure was caused by the apparent saturation of the Control Rod K14 Analog Rod Position Indication (NARPI) signal conditioning module [AA][IMOD]. Following the performance of a Temperature Compensation (TC set) adjustment on the K14 NARPI module on April 30, 2016, the K14 NARPI module stopped responding to rod motion demand. Thus, the K14 NARPI module was inoperable from the moment it was saturated on April 30, 2016, at 2232 until it was replaced and restored to operable status on July 15, 2016, at 1740.

EVENT DESCRIPTION

On July 15, 2016, with the Donald C. Cook Nuclear Plant Unit 1 Reactor operating in Mode 1 at 100 percent power, while performing the Unit 1 Full Length Control Rod Operability Surveillance Test, acceptance criteria for Control Bank 'D' was not met. When given an insertion demand of 8 steps, Rod K14 only indicated inserting one step. All other rod position indications responded as expected.

Technical Specification 3.1.7 Limiting Condition for Operation, requirements state that the Rod Position Indication (RPI) System and the Demand Position Indication System shall be OPERABLE. If one RPI per group is inoperable for one or more groups, Condition A requires a flux map to be performed every 8 hours to verify the position of the rod or Reduce THERMAL POWER to 50% or less within 8 hours.

Further investigation identified an apparent saturation of the NARPI signal conditioning module for Rod K14. This module feeds RPI in the control room and the Plant Process Computer [ID] for the K14 Control Rod position indication. TC set adjustment to the K14 NARPI module was performed on April 30, 2016. Following the TC set adjustment, the NARPI module stopped responding to rod motion demand.

Therefore, the K14 NARPI module was inoperable from the moment it was saturated on April 30, 2016, at 2232 until it was replaced and declared operable on July 15, 2016, at 1740 exceeding the completion time of 8 hours as described in Technical Specification 3.1.7 - Condition 'A'.

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Donald C. Cook Nuclear Plant Unit 1	05000315	2016	002	00

NARRATIVE

COMPONENT

1-RPIS-K14-SC (K14 CONTROL ROD POSITION ROD BOTTOM BISTABLE AND SIGNAL CONDITIONER)

ASSESSMENT OF SAFETY CONSEQUENCES

NUCLEAR SAFETY

There was no actual or potential nuclear safety hazard resulting from the inoperable K14 NARPI module. All control rods bottom lights were still functional and all control rods remained trippable.

INDUSTRIAL SAFETY

There was no actual or potential industrial safety hazard resulting from the inoperable K14 NARPI module.

RADIOLOGICAL SAFETY

There was no actual or potential radiological safety hazard resulting from the inoperable K14 NARPI module.

PROBABILISTIC RISK ASSESSMENT (PRA)

PRA models the plant response to accident scenarios that have the potential to end in either core damage or a large early release of radiation to the environment. Control rod position indicators like K14 NARPI are not used to mitigate these scenarios; therefore its inoperability did not increase the potential consequences of modeled accident scenarios. The rod bottom lights were still functional, meaning that the control room was still able to confirm reactor trip with K14 NARPI inoperable. Additionally, since the inoperability did not result in a plant trip, it did not increase the likelihood of occurrence of a modeled accident scenario. For these reasons, it is determined that the inoperability of K14 NARPI was not significant from a risk perspective.

CAUSE

Component failure of the Unit 1 Rod K14 NARPI signal conditioner. The component failure was not the result of human performance errors during the TC set adjustment.

CORRECTIVE ACTION

The Unit 1 Rod K14 NARPI signal conditioner was replaced on July 15, 2016. The Control Bank 'D' surveillance was completed successfully following signal conditioner replacement.

PREVIOUS SIMILAR EVENTS

A review of Licensee Event Reports for the past three years found no similar events