

March 31, 2016

AEP-NRC-2016-34
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 315/2015-002-02
Technical Specification Violation Due to Inoperable Residual Heat Removal Pump

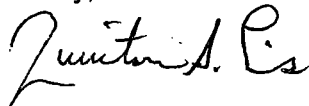
In accordance with 10 CFR 50.73, Licensee Event Report (LER) System, Indiana Michigan Power Company, the licensee for Donald C. Cook Nuclear Plant Unit 1, is submitting as an enclosure to this letter the following report:

LER 315/2015-002-02: "Technical Specification Violation Due to Inoperable Residual Heat Removal Pump"

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

RAW/db

Enclosure

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

IE22
NRR

Enclosure to AEP-NRC-2016-34

LER 315/2015-002-02

Technical Specification Violation Due to Inoperable Residual Heat Removal Pump



LICENSEE EVENT REPORT (LER)

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

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.

1. FACILITY NAME

Donald C. Cook Nuclear Plant Unit 1

2. DOCKET NUMBER

05000315

3. PAGE

1 of 4

4. TITLE

Technical Specification Violation due to Inoperable Residual Heat Removal Pump

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
06	14	2015	2015	002	02	03	31	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	<input type="checkbox"/> 20.2201(b)	<input type="checkbox"/> 20.2203(a)(3)(i)	<input type="checkbox"/> 50.73(a)(2)(ii)(A)	<input type="checkbox"/> 50.73(a)(2)(viii)(A)
	<input type="checkbox"/> 20.2201(d)	<input type="checkbox"/> 20.2203(a)(3)(ii)	<input type="checkbox"/> 50.73(a)(2)(ii)(B)	<input type="checkbox"/> 50.73(a)(2)(viii)(B)
	<input type="checkbox"/> 20.2203(a)(1)	<input type="checkbox"/> 20.2203(a)(4)	<input type="checkbox"/> 50.73(a)(2)(iii)	<input type="checkbox"/> 50.73(a)(2)(ix)(B)
	<input type="checkbox"/> 20.2203(a)(2)(i)	<input type="checkbox"/> 50.36(c)(1)(i)(A)	<input type="checkbox"/> 50.73(a)(2)(iv)(A)	<input type="checkbox"/> 50.73(a)(2)(x)
10. POWER LEVEL	<input type="checkbox"/> 20.2203(a)(2)(ii)	<input type="checkbox"/> 50.36(c)(1)(ii)(A)	<input checked="" type="checkbox"/> 50.73(a)(2)(v)(A)	<input type="checkbox"/> 73.71(a)(4)
	<input type="checkbox"/> 20.2203(a)(2)(iii)	<input type="checkbox"/> 50.36(c)(2)	<input checked="" type="checkbox"/> 50.73(a)(2)(v)(B)	<input type="checkbox"/> 73.71(a)(5)
	<input type="checkbox"/> 20.2203(a)(2)(iv)	<input type="checkbox"/> 50.46(a)(3)(ii)	<input type="checkbox"/> 50.73(a)(2)(v)(C)	<input type="checkbox"/> 73.77(a)(1)
	<input type="checkbox"/> 20.2203(a)(2)(v)	<input type="checkbox"/> 50.73(a)(2)(i)(A)	<input checked="" type="checkbox"/> 50.73(a)(2)(v)(D)	<input type="checkbox"/> 73.77(a)(2)(i)
	<input type="checkbox"/> 20.2203(a)(2)(vi)	<input checked="" type="checkbox"/> 50.73(a)(2)(i)(B)	<input type="checkbox"/> 50.73(a)(2)(vii)	<input type="checkbox"/> 73.77(a)(2)(ii)
	<input type="checkbox"/> 50.73(a)(2)(i)(C)	<input type="checkbox"/> OTHER	Specify in Abstract below or in NRC Form 366A	

12. LICENSEE CONTACT FOR THIS LER

LICENSEE CONTACT

Michael K. Scarpello, Regulatory Affairs Manager

TELEPHONE NUMBER (Include Area Code)

(269) 466-2649

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

CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX

14. SUPPLEMENTAL REPORT EXPECTED

☐ YES (If yes, complete 15. EXPECTED SUBMISSION DATE) ☒ NO15. EXPECTED
SUBMISSION
DATE

MONTH DAY YEAR

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

On June 14, 2015, Donald C. Cook Nuclear Plant operations personnel identified an oil leak from the Unit 1 East Residual Heat Removal (RHR) pump (Train A) lower motor bearing oil reservoir. An engineering evaluation concluded that the leak rate would preclude the pump from meeting its 30-day mission time during accident conditions, thus rendering the Unit 1 East RHR pump inoperable. Review of oil addition logs concluded that this condition has existed, but was not recognized as such, since March 9, 2015. This exceeds the 72 hours allowed by Technical Specification (TS) Limiting Condition for Operation (LCO) 3.5.2, Condition A and is reportable in accordance with 10 CFR 50.73(a)(2)(i)(B).

Concurrent with the Unit 1 East RHR pump (train A) inoperability while in Mode 1, the Unit 1 AB Emergency Diesel Generator (EDG) (Train B) was inoperable for a scheduled maintenance window commencing May 18, 2015, and ending with a TS required shutdown due to EDG failure. The inoperable AB EDG required the Unit 1 West RHR pump to be declared inoperable in accordance with LCO 3.8.1, Condition B.3 - "Declare required feature(s) supported by the inoperable DG inoperable when its required redundant feature(s) is inoperable." The Unit 1 West RHR Pump was not declared inoperable within four hours as required by TS LCO 3.8.1, Condition B.3. The Unit 1 West RHR pump should have been declared inoperable in accordance with TS LCO 3.8.1 Condition B.3 on three occasions while the Unit 1 AB EDG was inoperable for more than four hours during surveillance testing. Additionally, there were instances of inoperability in the Emergency Core Cooling System (ECCS) Train B constituting a "Loss of Safety Function" and is reportable in accordance with 10 CFR 50.73(a)(2)(v).

The RHR pump oil leak and the EDG have been repaired and are operable. The apparent cause has been determined that Station leadership was not equipped with a consistent methodology to effectively manage risk associated with various station activities that possessed apparent low probability of occurrence. Corrective actions to preclude repetition include enhancements to equipment monitoring and oil level management. Additionally, risk process management improvements were implemented, and a change management plan created to ensure that the correct questioning attitude is taking place during key station meetings.

NRC FORM 366A
(11-2015)

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB: NO. 3150-0104

EXPIRES: 10/31/2018



LICENSEE EVENT REPORT (LER) CONTINUATION SHEET

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.

1. FACILITY NAME	2. DOCKET		3. LER NUMBER		
Donald C. Cook Nuclear Plant Unit 1	05000-	315	YEAR 2015	SEQUENTIAL NUMBER - 002	REV NO 02

NARRATIVE

EVENT DESCRIPTION

On May 18, 2015, at 0010, the Unit 1 AB (Train B) Emergency Diesel Generator (EDG) [EK] was declared inoperable when it was removed from service for a scheduled maintenance window while Unit 1 was in Mode 1 at 100 percent power.

On June 1, 2015, at 0231, the Unit 1 Reactor [RCT] was shut down to comply with Technical Specification Limiting Condition for Operation (LCO) 3.8.1, Condition G.1 when EDG damage during a post maintenance run could not be repaired within the required 14-day Completion Time.

On June 14, 2015, with Unit 1 in Mode 5, operations personnel identified an oil leak from the Unit 1 East (Train A) Residual Heat Removal (RHR) [BP] pump [P] lower motor bearing oil reservoir [RVR]. An engineering evaluation concluded that the leak rate precluded the pump from meeting its required 30-day mission time during accident conditions, thus rendering the Unit 1 East RHR pump inoperable. Review of operator oil addition logs concluded that this leak had existed since March 9, 2015. The unrecognized inoperability of the 1 East RHR pump exceeded the 72 hours allowed by LCO 3.5.2, Condition A. This is reportable in accordance with 10 CFR 50.73(a)(2)(i)(B), Operation or Condition Prohibited by Technical Specifications. Unit 1 entered Mode 4 at 1821 on June 1, 2015, exiting the mode of applicability for LCO 3.5.2.

The inoperability of Unit 1 AB EDG concurrent with the inoperable Unit 1 East RHR Pump requires declaring the Unit 1 West RHR pump inoperable in accordance with LCO 3.8.1, Condition B.3 – Declare required feature(s) supported by the inoperable EDG inoperable when its required redundant feature(s) is inoperable. The inoperability of the Unit 1 East RHR pump was not recognized at this time, so the Unit 1 West RHR pump was not declared inoperable when the Unit 1 AB EDG was made inoperable.

In retrospect, had the Unit 1 East RHR pump been recognized as being inoperable, the Unit 1 West RHR pump should have been declared inoperable within four hours from when the Unit 1 AB EDG was declared inoperable on May 18, 2015, at 0010, until June 2, 2015, at 0410, when Unit 1 entered Mode 5, exiting the mode of applicability for LCO 3.8.1, AC Sources-Operating, and LCO 3.5.3, ECCS-Shutdown. This is reportable in accordance with 10 CFR 50.73(a)(2)(i)(B), Operation or Condition Prohibited by Technical Specifications. The Unit 1 AB EDG was declared inoperable for more than four hours on three occasions between March 9, 2015 and May 18, 2015 to support surveillance testing without declaring the Unit 1 West RHR pump inoperable in accordance with LCO 3.8.1, Condition B.3. Each occurrence of the Unit 1 AB EDG being inoperable for surveillance testing that exceeded LCO 3.8.1 Condition B.3 completion time is listed below.

3/18/15 – Unit 1 AB EDG was declared inoperable for Fast Speed Start testing. Duration 6.23 hours.

4/17/15 – Unit 1 AB EDG was declared inoperable due to declaring Unit 2 CD EDG inoperable with the Essential Service Water (ESW) crosstie header isolation valves open for Loss of Power/Loss of Coolant Accident (LOP/LOCA) testing. Duration 42.8 hours.

4/21/15 – Unit 1 AB EDG was declared inoperable for Slow Speed Start testing. Duration 4.55 hours.

5/18/15 – Unit 1 AB EDG was declared inoperable for maintenance window. Duration 364 hours.

The offsite power sources (preferred and alternate) remained operable and available for the durations that the U1 AB EDG was inoperable thus there is reasonable assurance that the Unit 1 West RHR pump remained capable of fulfilling its safety function. For these occurrences, safety function of the Emergency Core Cooling System (ECCS)[BP][BQ] was not lost.

In the event of a loss of offsite power (LOOP), the Unit 1 East RHR pump was available to perform its shutdown cooling function. Therefore, capability to mitigate a LOOP was not lost.

Concurrent with the inoperability of the East RHR Pump (Train A) there were instances of inoperability of the opposite train of the ECCS due to maintenance and/or testing constituting a Loss of Safety Function. Concurrent inoperability of both trains of ECCS is reportable in accordance with 10 CFR 50.73(a)(2)(v), Event or Condition that could Have Prevented Fulfillment of a Safety Function. However, there is reasonable assurance that the East RHR Pump would have operated for at least 6.29 days before oil leakage would have impacted performance of the pump. Thus, for each occurrence that both trains of ECCS were inoperable, capability was not lost because the duration in each occurrence was less than 6.29 days. Each occurrence is listed under the events section below.

Events

3/15/15 – LCO 3.5.2 was not met for Train B ECCS, when the Unit 1 South Safety Injection (SI) pump was declared inoperable, but remained available, during pump testing. Duration 1.07 hours.

3/19/15 – LCO 3.5.2 was not met for Train B ECCS, when the Unit 1 West ESW train was declared inoperable due to aligning ESW to the South Control Room Air Conditioning (CRAC) Chiller to support leakage testing. Duration 1.92 hours.

NRC FORM 366A
(11-2015)

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB: NO. 3150-0104

EXPIRES: 10/31/2018



LICENSEE EVENT REPORT (LER) CONTINUATION SHEET

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Donald C. Cook Nuclear Plant Unit 1	05000-	315	YEAR 2015	SEQUENTIAL NUMBER 002	REV NO 02

NARRATIVE

- 4/05/15 – LCO 3.5.2 was not met for Train B ECCS, when the Unit 1 West ESW train was declared inoperable when Unit 2 Train A 250 Vdc Battery and its associated Distribution Bus were rendered inoperable with the ESW crosstie header isolation valves open by cross-tying the Unit 2 Train A DC Bus with the Unit 2 Train B DC Bus, Battery, and Battery Charger. Duration 12.77 hours.
- 4/11/15 – LCO 3.5.2 was not met for Train B ECCS, when the Unit 1 West ESW train was declared inoperable when Unit 2 East ESW pump was declared inoperable with the ESW crosstie header isolation valves open during Unit 2 East ESW header fill and vent. Duration 16.8 hours.
- 4/15/15 – LCO 3.5.2 was not met for Train B ECCS, when the Unit 1 West ESW train was declared inoperable when Unit 2 East ESW train was declared inoperable with the ESW crosstie header isolation valves open for surveillance testing. Duration 1.4 hours.
- 4/20/15 – LCO 3.5.2 was not met for Train B ECCS, when the Unit 1 West ESW train was declared inoperable when the Unit 2 East ESW train was declared inoperable with the ESW crosstie header isolation valves open for Unit 2 LOP/LOCA testing. Duration 0.53 hours.
- 5/26/15 – LCO 3.5.2 was not met for Train B ECCS, when Train B ECCS was declared inoperable due to placing the Train B Solid State Protection System (SSPS)[JG][JE] Input Error Inhibit Switch in INHIBIT to support Train B SSPS Testing. Duration 1.48 hours.
- 5/28/15 – LCO 3.5.2 was not met for Train B ECCS, when the Unit 1 West ESW train was declared inoperable when the West ESW Pump control switch was placed in PULL-TO-LOCK during West ESW train testing. Duration 1.2 hours.
- 5/28/15 – LCO 3.5.2 was not met for Train B ECCS, when the Unit 1 West Centrifugal Charging Pump (CCP) Leakoff Valve breaker was opened during Pressurizer Pressure Protection Set III Channel Operational Test and Calibration. Duration 2.35 hours.
- 5/28/15 – LCO 3.5.2 was not met for Train B ECCS, when the Unit 1 West RHR Train was declared inoperable during West RHR Heat Exchanger Outlet Flow Control Valve Stroke Testing. Duration 0.08 hours.
- 6/02/15 – LCO 3.5.3 was not met for Train B ECCS, when the West CCP was rendered inoperable per plant procedures to meet Low Temperature Overpressure Protection (LTOP) requirements. Duration 3.67 hours.

For each occurrence listed above, Unit 1 Train B ECCS operability would have been promptly restored by performing a few simple actions as directed by plant procedures.

The Unit 1 East RHR oil leak has been repaired and the pump declared operable. The Unit 1 AB EDG has been repaired and declared operable.

ASSESSMENT OF SAFETY CONSEQUENCES

NUCLEAR SAFETY

The Probabilistic Risk Assessment (PRA) risk significance is considered low because the East RHR pump was available to operate greater than the PRA mission time. If a LOOP were to occur during the time in which the Unit 1 AB EDG was unavailable, the East RHR pump would have been considered available until offsite power was restored or the supplemental diesel generators were aligned to Train B to power the West RHR pump. The impact to Core Damage Frequency (CDF) is less than $1E-6$ and the impact to Large Early Release Frequency (LERF) is less than $1E-7$ for both fire and internal events. The safety significance of this event is considered to be of low risk significance.

INDUSTRIAL SAFETY

There was no actual or potential industrial safety hazard resulting from the inoperable RHR pump.

RADIOLOGICAL SAFETY

There was no actual or potential radiological safety hazard resulting from the inoperable RHR pump.

CAUSE OF EVENT

A common cause evaluation was performed, that included several other plant events, to determine the apparent cause of this event. The apparent cause has been determined to be that Station leadership was not equipped with a consistent methodology to effectively manage risk associated with various station activities that possessed apparent low probability of occurrence. A contributing cause was interdepartmental interface has been inadequate to provide appropriate challenge and support of risk related decisions.

NRC FORM 366A
(11-2015)

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB: NO. 3150-0104

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Donald C. Cook Nuclear Plant Unit 1	05000-	315	YEAR 2015	SEQUENTIAL NUMBER 002	REV NO 02

NARRATIVE

EXTENT OF CONDITION

An extent of condition review was performed to identify where the station was vulnerable to the same or similar apparent cause. It was determined that this condition could be potentially applicable to all work being performed at the station by all work groups. The corrective actions have addressed the extent of condition identified.

CORRECTIVE ACTIONS

Corrective Actions completed to Preclude Repetition include:

Plant tour and equipment monitoring frequencies have been increased in the ECCS pump areas.

Enhancements were made to the oil addition process, to include supervisor engagement and add a requirement to enter oil additions into the corrective action program.

A risk assessment presentation was communicated to station personnel to heighten awareness of risk management issues.

Plant risk assessment processes have been improved through implementation of a new Nuclear Risk Management procedure and a station risk committee.

PREVIOUS SIMILAR EVENTS

A review of the past three years Licensee Event Reports identified no similar events.