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

June 25, 2020

AEP-NRC-2020-44  
10 CFR 50.73

Docket No.: 50-316

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

Donald C. Cook Nuclear Plant Unit 2  
LICENSEE EVENT REPORT 316/2020-002-00

Plant Shutdown Required by Technical Specifications Due to Reactor Coolant System Leakage

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 2, is submitting as an enclosure to this letter the following report:

LER 316/2020-002-00: Plant Shutdown Required by Technical Specifications Due to Reactor Coolant System Leakage

There are no commitments contained in this submittal.

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

Sincerely,

Q. Shane Lies  
Site Vice President

MPH/ml

Enclosure: Licensee Event Report 316/2020-002-00: Plant Shutdown Required by Technical Specifications Due to Reactor Coolant System Leakage

IEZZ  
NRR

- c: R. J. Ancona – MPSC  
S. P. Wall – NRC, Washington D.C.  
EGLE – RMD/RPS  
NRC Resident Inspector  
J. B. Giessner – NRC Region III  
A. J. Williamson – AEP Ft. Wayne

Enclosure to AEP-NRC-2020-44

Licensee Event Report 316/2020-002-00: Plant Shutdown Required by Technical Specifications  
Due to Reactor Coolant System Leakage



**LICENSEE EVENT REPORT (LER)**

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

(See NUREG-1022, R.3 for instruction and guidance for completing this form  
<http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1022/r3/>)

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 Information Services Branch (T-6 A10M), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by e-mail to [Infocollects.Resource@nrc.gov](mailto:Infocollects.Resource@nrc.gov), and the OMB reviewer at: OMB Office of Information and Regulatory Affairs, (3150-0104), Attn: Desk Officer for the Nuclear Regulatory Commission, 725 17th Street NW, Washington, DC 20503; e-mail: [ira\\_submission@omb.eop.gov](mailto:ira_submission@omb.eop.gov). The NRC may not conduct or sponsor, and a person is not required to respond to, a collection of information unless the document requesting or requiring the collection displays a currently valid OMB control number.

<b>1. FACILITY NAME</b> Donald C. Cook Nuclear Plant Unit 2	<b>2. DOCKET NUMBER</b> 05000316	<b>3. PAGE</b> 1 OF 3
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**4. TITLE**  
Plant Shutdown Required by Technical Specifications Due to Reactor Coolant System Leakage

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
5	1	2020	2020	002	00	06	25	2020	N/A	05000
									FACILITY NAME	DOCKET NUMBER
									N/A	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)(A)
	<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  100	<input type="checkbox"/> 20.2203(a)(2)(ii)	<input type="checkbox"/> 50.36(c)(1)(ii)(A)	<input 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 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 checked="" type="checkbox"/> 50.73(a)(2)(i)(A)	<input 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 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 Director	TELEPHONE NUMBER (Include Area Code) (269) 466-2649
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**13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT**

CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO ICES	CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO ICES
B	AB	PCV	COPE	Y					

<b>14. SUPPLEMENTAL REPORT EXPECTED</b> <input type="checkbox"/> YES (If yes, complete 15. EXPECTED SUBMISSION DATE) <input checked="" type="checkbox"/> NO	<b>15. EXPECTED SUBMISSION DATE</b>	MONTH	DAY	YEAR

ABSTRACT (Limit to 1400 spaces, i.e., approximately 14 single-spaced typewritten lines)

On May 1, 2020, at 1059, a Unit 2 shutdown was completed in accordance with Technical Specification (TS) 3.4.13, Condition B for Reactor Coolant System (RCS) Operational Leakage. At 0354, Operators detected an estimated 8 gallons per minute (gpm) RCS leak. The source of the leak could not be identified and TS 3.4.13, Condition A was entered for unidentified RCS leakage in excess of the 0.8 gpm limit. Subsequently, at 0754, TS 3.4.13, Condition B was entered, when the 4 hour limit to complete the required action of Condition A, to reduce leakage to within limits, could not be met.

The cause of the leakage was due to a weld failure on the 2NRV163, RCS Loop #3 Pressurizer Spray Control Valve, 0.5 inch telltale line. The lower telltale on 2NRV163 was cut and a welded plug was installed. The lower telltale on 2NRV164, Reactor Coolant Loop #4 to Pressurizer Spray Control Valve was also cut and a welded plug was installed to address extent of condition and prevent a similar event. The location of the weld failure was evaluated and determined not to be Reactor Coolant Pressure Boundary leakage.

The Unit 2 shutdown was reported via Event Notification 54687 in accordance with 10 CFR 50.72(b)(2)(i). The completion of the plant shutdown required by TS is reportable as a Licensee Event Report in accordance with 10 CFR 50.73(a)(2)(i)(A).



**LICENSEE EVENT REPORT (LER)  
CONTINUATION SHEET**

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1. FACILITY NAME	2. DOCKET NUMBER		3. LER NUMBER		
Donald C. Cook Nuclear Plant Unit 2	05000316	YEAR	SEQUENTIAL NUMBER	REV NO.	
		2020	- 002	- 00	

**NARRATIVE**

**EVENT DESCRIPTION**

On May 1, 2020, at 1059, a Unit 2 shutdown was completed in accordance with Technical Specification (TS) 3.4.13, Condition B for Reactor Coolant System [AB] (RCS) Operational Leakage. At 0354, Operators detected an estimated 8 gpm RCS leak. The source of the leak could not be identified and TS 3.4.13, Condition A was entered for unidentified RCS leakage in excess of the 0.8 gpm limit. Condition A requires leakage to be reduced to within limits, in 4 hours or less. Subsequently, at 0754, TS 3.4.13, Condition B was entered when the required action of Condition A, could not be met. Condition B requires Unit 2 to be shutdown to MODE 3 within 6 hours and MODE 5 within 36 hours.

At 1000, Operators commenced a shutdown of Unit 2 in accordance with the plant procedure for Rapid Power Reduction Response due to an Unisolable RCS leak. At 1059, Unit 2 was manually tripped from 15% power, in accordance with normal operating procedures. All systems functioned normally.

The initial inspection inside containment identified the leak to be near a Pressurizer [PZR] Spray Valve [PCV]. Upon further investigation, it was determined that a 0.5 inch welded telltale line for 2NRV163, Reactor Coolant Loop #3 to Pressurizer Spray Control Valve, failed, resulting in the unidentified RCS leak. Since the leakage was from the telltale line, and not from the Pressurizer Spray Line Piping, the leakage was determined not to be Reactor Coolant Pressure Boundary leakage.

The completion of the plant shutdown, required by TS, is reportable as a Licensee Event Report in accordance with 10 CFR 50.73(a)(2)(i)(A).

**COMPONENT**

2NRV163, Reactor Coolant Loop #3 to Pressurizer Spray Control Valve.

**CAUSE OF THE EVENT**

The cause of the leak was determined to be a bellows failure, within 2NRV163, that resulted in a failure of the 0.5 inch welded telltale line, for 2NRV163. A Root Cause Evaluation (RCE) is in progress and a preliminary analysis determined that the Pressurizer Spray Valve design includes a bellows telltale line that is susceptible to Stress Corrosion Cracking. This resulted in the telltale line failing when it was subjected to RCS pressure following leakage past the valve internal bellows. If the RCE reveals further insights or causes different than described in this LER, a supplement will be provided.



**LICENSEE EVENT REPORT (LER)  
CONTINUATION SHEET**

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1. FACILITY NAME	2. DOCKET NUMBER	3. LER NUMBER		
		YEAR	SEQUENTIAL NUMBER	REV NO.
Donald C. Cook Nuclear Plant Unit 2	05000316	2020	- 002	- 00

**CORRECTIVE ACTIONS**

The lower telltale on 2NRV163 was cut and a welded plug was installed. Additionally, the lower telltale on 2NRV164, Reactor Coolant Loop #4 to Pressurizer Spray Control Valve was cut and a welded plug was installed to address extent of condition and prevent a similar event.

Planned corrective actions include performing a visual inspection of the Unit 1 Pressurizer Spray Valves, 1NRV163 & 1NRV164, bellows telltale lines and plugging the lines at the bonnet.

**ASSESSMENT OF SAFETY CONSEQUENCES**

**NUCLEAR SAFETY**

There was no actual or potential nuclear safety hazard resulting from the failed telltale line for 2NRV163.

**INDUSTRIAL SAFETY**

There was no actual or potential industrial safety hazard resulting from the failed telltale line for 2NRV163.

**RADIOLOGICAL SAFETY**

There was no actual or potential radiological safety hazard resulting from the failed telltale line for 2NRV163. This event was of minimal significance to the health and safety of the public.

**PROBABILISTIC RISK ASSESSMENT**

A Probabilistic Risk Assessment (PRA) was performed and determined the leak to be below the threshold to be considered a Small-Break Loss of Coolant Accident due to the fact that normal charging was capable of making up the coolant loss. Additionally, the leak was throttled by the restriction in the bonnet of 2NRV163, effectively acting as an orifice, indicating that it could not have increased in size prior to the leak being fixed. Because 2NRV163 does not perform a safety function during shutdown, and the leakage was such that safe shutdown would not be impacted, the only risk from this event comes from the risk associated with a normal plant shutdown. Therefore, the PRA conclusion is that this event was of very low safety significance.

**PREVIOUS SIMILAR EVENTS**

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