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May 18, 2012

AEP-NRC-2012-31  
10 CFR 50.73

Docket No. 50-316

U. S. Nuclear Regulatory Commission  
Attn: Document Control Desk  
Washington, DC 20555-0001

Donald C. Cook Nuclear Plant Unit 2  
LICENSEE EVENT REPORT 316/2012-001-00  
CONTAINMENT DIVIDER BARRIER SEAL INOPERABLE DURING PLANT OPERATION

In accordance with the criteria established by 10 CFR 50.73, Licensee Event Report System, the following report is being submitted:

LER 316/2012-001-00: "Containment Divider Barrier Seal Inoperable During Plant Operation"

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,

Joel P. Gebbie  
Site Vice President

RAW/kmh

Enclosure

- c: J. T. King – MPSC, w/o enclosure  
S. M. Krawec – AEP Ft. Wayne, w/o enclosure  
MDEQ – WHMD/RPS, w/o enclosure  
NRC Resident Inspector  
C. D. Pederson – NRC Region III  
P. S. Tam – NRC Washington DC  
INPO Records Center

JE22  
NRR

**LICENSEE EVENT REPORT (LER)**

(See reverse 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 Section (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.

<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**  
Containment Divider Barrier Seal Inoperable During Plant Operation

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
03	22	2012	2012	- 001	- 00	05	18	2012	FACILITY NAME	DOCKET NUMBER 05000

<b>9. OPERATING MODE</b>  5	<b>11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §:</b> (Check all that apply)									
	<input type="checkbox"/> 20.2201(b)	<input type="checkbox"/> 20.2203(a)(3)(i)	<input type="checkbox"/> 50.73(a)(2)(i)(C)	<input type="checkbox"/> 50.73(a)(2)(vii)						
<b>10. POWER LEVEL</b>  000	<input type="checkbox"/> 20.2201(d)	<input type="checkbox"/> 20.2203(a)(3)(ii)	<input type="checkbox"/> 50.73(a)(2)(ii)(A)	<input type="checkbox"/> 50.73(a)(2)(viii)(A)						
	<input type="checkbox"/> 20.2203(a)(1)	<input type="checkbox"/> 20.2203(a)(4)	<input type="checkbox"/> 50.73(a)(2)(ii)(B)	<input type="checkbox"/> 50.73(a)(2)(viii)(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)(iii)	<input type="checkbox"/> 50.73(a)(2)(ix)(A)						
	<input type="checkbox"/> 20.2203(a)(2)(ii)	<input type="checkbox"/> 50.36(c)(1)(ii)(A)	<input type="checkbox"/> 50.73(a)(2)(iv)(A)	<input type="checkbox"/> 50.73(a)(2)(x)						
	<input type="checkbox"/> 20.2203(a)(2)(iii)	<input type="checkbox"/> 50.36(c)(2)	<input type="checkbox"/> 50.73(a)(2)(v)(A)	<input type="checkbox"/> 73.71(a)(4)						
	<input type="checkbox"/> 20.2203(a)(2)(iv)	<input type="checkbox"/> 50.46(a)(3)(ii)	<input type="checkbox"/> 50.73(a)(2)(v)(B)	<input type="checkbox"/> 73.71(a)(5)						
	<input type="checkbox"/> 20.2203(a)(2)(v)	<input type="checkbox"/> 50.73(a)(2)(i)(A)	<input type="checkbox"/> 50.73(a)(2)(v)(C)	<input type="checkbox"/> OTHER						
	<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)(v)(D)	Specify in Abstract below or in NRC Form 366A						

**12. LICENSEE CONTACT FOR THIS LER**

FACILITY NAME Michael K. Scarpello, Regulatory Affairs Manager	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	MANUFACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX

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

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

On March 22, 2012, with Donald C. Cook Nuclear Plant Unit 2 in Mode 5 for a refueling outage, a Technical Specification (TS) required examination of the containment divider barrier seal identified one seal mounting bolt with a loose nut. On April 2, 2012, as the examination continued, two shallow nicks were found in one area of the seal material.

An evaluation of the deficiencies concluded that the divider barrier seal was inoperable, as it did not meet the requirements of the seal inspection surveillance. It is not known when the deficiencies occurred. It is conservatively concluded that the deficiencies existed during plant operation in Modes 1 through 4. Because the deficiencies had not been recognized, actions required by TS for an inoperable divider barrier seal in Modes 1 through 4 were not taken. Failure to take the required actions constitutes a noncompliance with the TS and is therefore being reported under 10CFR50.73(a)(2)(i)(B) "Operation or Condition Prohibited by Technical Specifications."

The causes of the loose nut and seal damage are unknown. The loose nut was tightened and the damaged seal material was repaired.

The evaluation of the seal deficiencies concluded that the divider barrier seal was fully functional. The identified conditions had no effect on plant nuclear safety and were not risk significant.

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**NARRATIVE**

**Conditions Prior to Event**

Mode 5

**Description of Event**

On March 22, 2012, with Donald C. Cook Nuclear Plant Unit 2 in Mode 5 for a refueling outage, a Technical Specification (TS) required surveillance of the containment divider barrier seal [SEAL] was in progress. During inspection of the seal material and associated mounting hardware, personnel identified one seal mounting bolt with a loose nut. A gap existed between the nut and the seal bar.

On April 2, 2012, while continuing the divider barrier seal surveillance, personnel identified two nicks in the seal material. These nicks were in the same area of the seal, and were approximately 1/4 inch wide and 1/2 inch long, with a maximum penetration into the seal material of approximately 1/16 inch.

A past operability determination evaluation of the above deficiencies concluded that the divider barrier seal was inoperable because it did not meet the requirements of seal inspection surveillance requirement S.R. 3.6.13.5, which requires confirmation that:

- a. Seal and seal mounting bolts are properly installed; and
- b. Seal material shows no evidence of deterioration due to holes, ruptures, chemical attack, abrasion, radiation damage, or changes in physical appearance.

It is not known when the deficiencies described above occurred. The evaluation conservatively concludes that the deficiencies existed during plant operation in Modes 1 through 4.

With the divider barrier seal inoperable during plant operation in Modes 1 through 4, Technical Specification Limiting Condition for Operation (LCO) 3.6.13 (Condition B) requires that the seal be restored to Operable condition within one hour. If the seal is not restored to Operable condition during that time, the unit must be placed in Mode 3 within 6 hours and in Mode 5 within 36 hours. These required actions were not taken.

Failure to take the required actions constitutes a noncompliance with the Technical Specifications and is reportable under 10CFR50.73(a)(2)(i)(B) "Operation or Condition Prohibited by Technical Specifications."

**Cause of Event**

The specific causes of the seal damage and loose nut are unknown.

**Analysis of Event**

It is an essential requirement of the ice condenser containment that the steam and air flowing from the lower compartment in an accident condition be routed to the upper containment compartment via the ice bed. To satisfy this requirement, the lower and upper compartments are separated by a divider barrier. The divider barrier includes as a structural element the flexible seal between the boundaries of the ice condenser compartment and the containment wall.

A past operability determination evaluation was performed of the impact of the loose nut and the damage to the flexible seal material. The evaluation concluded that the divider barrier seal and its related structural steel elements were fully functional, and the identified conditions had no effect on plant nuclear safety.

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**NARRATIVE**

Since the divider barrier seal was fully capable of performing its function with the identified conditions, the degradation of the divider barrier seal had no effect on the PRA results and was not risk significant from a PRA perspective.

Because the divider barrier seal was capable of performing its safety function with the identified deficiencies, the event does not constitute a significant degradation of safety barriers or an unanalyzed condition, and does not involve a safety system functional failure.

**Corrective Actions**

**Completed Corrective Actions**

A mode constraint was established to ensure that the divider barrier seal deficiencies were corrected prior to the unit entering Mode 4. The damage to the seal material was repaired, and the loose nut was tightened. The work was inspected and determined to be satisfactory. The mode constraint was lifted.

**Planned Corrective Actions**

No additional corrective actions are planned.

**Previous Similar Events**

A search of Licensee Event Reports (LER) for Donald C. Cook Nuclear Plant Units 1 and 2 for the past 3 years identified two LERs documenting conditions prohibited by Technical Specifications due to inoperability of the divider barrier seal:

LER 05000-316/2010-002-00

On October 15, 2010, during performance of the surveillance of the divider barrier seal, personnel identified two divider barrier seal retaining bolts missing, one retaining bolt with a loose nut and one retaining bolt missing its nut. Investigation of the condition concluded that the nut has been missing for the duration of the recently completed operating cycle, the bolts have been presumed missing since replacement of the divider barrier seal in 1990 and the loose nut was not properly tightened following removal of a seal sample coupon during a previous outage. Although the evaluation of the condition concluded the safety function of the divider barrier would still be met, the condition described above constitutes a non-compliance with the Technical Specification (TS) surveillance requirement and therefore is reportable as a condition prohibited by TS. The cause of the event was determined to be a lack of clear and detailed guidance in the containment divider barrier seal surveillance procedure. The failure to comply with TS 3.6.13 was reported in accordance with 10 CFR 50.73(a)(2)(i)(B), Operation or Condition Prohibited by Technical Specifications.

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On November 30, 2010, Operators determined that the containment divider barrier was inoperable. This occurred shortly after Unit 2 ascended from Mode 5 to Mode 4. A modification of the containment divider barrier seal had been completed prior to entering Mode 4, but the seal was not recognized as having been reassembled incorrectly at that time. As a result, the entry into Mode 4 was made with the Technical Specification (TS) required containment divider barrier inoperable. The cause was personnel exceeding written work scope by disassembling and not properly restoring a portion of the divider barrier seal adjacent to the area being modified. Ascension to Mode 4 with the containment divider barrier inoperable without meeting LCO 3.0.4 conditions was reported in accordance with 10 CFR 50.73(a)(2)(i)(B), Operation or Condition Prohibited by Technical Specifications.