

CATEGORY 1

REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR: 9802190221 DOC. DATE: 98/02/13 NOTARIZED: NO DOCKET #
 FACIL: 50-316 Donald C. Cook Nuclear Power Plant, Unit 2, Indiana M 05000316
 AUTH. NAME AUTHOR AFFILIATION
 SCHOEPF, P. Indiana Michigan Power Co.
 SAMPSON, J. R. Indiana Michigan Power Co.
 RECIP. NAME RECIPIENT AFFILIATION

SUBJECT: LER 97-010-01: on 971210, use of teflon packing on containment
 airlock door interlock shaft resulted in potentially
 degraded condition. Caused by unclear written work
 instruction. Teflon rings were replaced. W/980213 ltr.

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American Electric Power
Cock Nuclear Plant
One Cook Place
Bridgman, MI 49106
616 465 5901



February 13, 1998

United States Nuclear Regulatory Commission
Document Control Desk
Washington, DC 20555

Operating Licenses DPR-74
Docket No. 50-316

Document Control Manager:

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

97-010-01

Sincerely,

A handwritten signature in cursive script that reads 'J. R. Sampson'.

J. R. Sampson
Site Vice President

/mbd

Attachment

c: A. B. Beach, Region III
E. E. Fitzpatrick
P. A. Barrett
S. J. Brewer
R. Whale
D. Hahn
Records Center, INPO
NRC Resident Inspector

IE 221

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LICENSEE EVENT REPORT (LER)

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (MNB 7714), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1)
Donald C. Cook Nuclear Plant - Unit 2

DOCKET NUMBER (2)
50-316

PAGE (3)
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TITLE (4) Use of Teflon Packing on Containment Airlock Door Interlock Shaft Results in Potentially Degraded Condition

EVENT DATE (5)			LER NUMBER (6)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
12	10	97	97	010	01	02	13	98	Donald C. Cook Nuclear Plant	50-315
									FACILITY NAME	DOCKET NUMBER

OPERATING MODE (9)	6	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)								
POWER LEVEL (10)	0	20.2201(b)			20.2203(a)(3)(i)			50.73(a)(2)(iii)		73.71(b)
		20.2203(a)(1)			20.2203(a)(3)(ii)			50.73(a)(2)(iv)		73.71e
		20.2203(a)(2)(i)			20.2203(a)(4)			50.73(a)(2)(v)		OTHER
		20.2203(a)(2)(ii)			50.36(c)(1)			50.73(a)(2)(vii)		(Specify in Abstract below and in Text, NRC Form 366A)
		20.2203(a)(2)(iii)			50.36(c)(2)			50.73(a)(2)(viii)(A)		
		20.2203(a)(2)(iv)			50.73(a)(2)(I)			50.73(a)(2)(viii)(B)		
20.2203(a)(2)(v)			x 50.73(a)(2)(ii)			50.73(a)(2)(x)				

LICENSEE CONTACT FOR THIS LER (12)

NAME
Mr. Paul Schoepf - Safety Related Mechanical Engineering Manager

TELEPHONE NUMBER (Include Area Code)
616/465-5901
Extension 2408

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

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS		CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS

SUPPLEMENTAL REPORT EXPECTED (14)

YES (If yes, complete EXPECTED SUBMISSION DATE).	X	NO	EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
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ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) (16)

During periodic maintenance of the Unit 2 upper containment airlock, the seal for the inner bulkhead interlock shaft was found to consist of Teflon packing rings rather than the specified EPDM elastomer. As Teflon degrades when exposed to the high radiation levels that could exist inside the containment following a postulated loss of coolant accident, a leakage path from the containment into the airlock compartment could have been opened. This condition was reported via ENS at 1726 hours EST the same day in accordance with 10CFR50.72(b)(2)(i), as a degraded condition discovered while the reactor was shutdown.

The cause of the event was unclear written work instructions which resulted in incomplete performance of the shaft seal replacement.

An evaluation of the impact of the use of Teflon seals in the inner bulkhead interlock shaft concluded that although there could have been increased leakage into the airlock following a postulated LOCA, the outer airlock bulkhead, and its associated sealed door provided a barrier to excessive radioactive material releases. Thus, the condition did not present a significant risk to the health and safety of the public.

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TEXT (if more space is required, use additional NRC Form 366A's) (17)

Conditions Prior to the Event

Unit 1 was in Mode 5, cold shutdown.
Unit 2 was in Mode 6, cold shutdown

Description of the Event

During periodic maintenance of the Unit 2 upper containment airlock (EIIS/BD-AL), the seal for the inner bulkhead interlock shaft was found to consist of Teflon packing rings rather than the specified EPDM elastomer. Teflon significantly degrades when exposed to the high radiation levels that could exist inside the containment following a postulated loss of coolant accident. After deterioration of the rings, a leakage path from the containment to the airlock compartment could have been opened.

The inner bulkhead interlock shaft was originally supplied with Teflon seals. At the time of installation, the detrimental effects of radiation on Teflon had not been identified, and, therefore, no action was taken regarding the seal material. In 1984, the service life of organic materials came into question. As a result, a general refurbishment and upgrade of the airlocks was performed between 1984 and 1989. However, during the refurbishment, the seals in the inner bulkhead interlock shaft were not replaced.

Cause of the Event

The cause of the event was unclear written work instructions which resulted in incomplete performance of the shaft seal replacement.

The inner airlock door contains a handwheel seal and an interlock mechanism. Additionally, there are interlock shaft seals located in the inner bulkhead. The intent of the refurbishment was to replace the seals for the door handwheel shaft and the bulkhead interlock shafts.

From a review of the design change documents and associated job orders, it appears that the need to change the seals on all components was not clearly communicated. The documentation refers to changing the handwheel seals and the interlock seals "in the airlock door". Although a drawing showed the bulkhead interlock seals, the other references all implied the interlock seals were on the door. Because the door was specifically mentioned in the design package and the job orders, the work scope was limited to changing the seals in the airlock door.

Analysis of the Event

This event is reportable under the provisions of 10CFR50.73(2)(ii), "any event or condition that resulted in the condition of the nuclear power plant, including its principal safety barriers, being seriously degraded..".

The personnel airlock is a cylinder which penetrates the containment wall, and has two doors in series, one at either end of the cylinder. Each door is designed and constructed to withstand the design basis containment pressure of 12 psig and is subjected to 10CFR50 Appendix J testing.

The Teflon seals were used to seal a shaft which penetrates only the inner bulkhead (there are no interlock shaft seals in the outer bulkhead), and the seals are located inside the shaft mechanism. Although Teflon is known to be susceptible to radiation

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TEXT (if more space is required, use additional NRC Form 366A's) (17)

Analysis of the Event Con't

damage, it is unlikely that a complete loss of sealing capability would have occurred because the seals are retained inside the shaft and would still function as a barrier to flow.

The airlock is leak tested in accordance with 10CFR50, Appendix J and meets the leakage criteria established in the technical specifications. Even if there could have been increased flow through the shaft seal, the outer door provides a barrier to increased leakage from the airlock to the outside environment.

Corrective Action

All of the airlocks have been inspected and Teflon rings were replaced with EPDM o-rings. Inappropriate Teflon seals were found on all inner bulkhead interlock shaft seals.

The potential for general improvements in job order clarity based on this event, is recognized. However, significant improvements have been implemented since the time frame of this event in job order instructions, worker practices and procedure use and adherence, that address the root cause of this event. Additional preventive actions based on this event are not warranted.

The preventive maintenance task associated with the airlock seal replacement will be clarified to remove ambiguities prior to the next implementation.

Failed Component Identification

None

Previous Similar Events

None

