

# CATEGORY 1

## REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR:9603210239      DOC.DATE: 96/03/18      NOTARIZED: NO      DOCKET #  
 FACIL:50-316 Donald C. Cook Nuclear Power Plant, Unit 2, Indiana M      05000316  
 AUTH.NAME      AUTHOR AFFILIATION  
 NOBLE,D.      American Electric Power Co., Inc.  
 BLIND,A.A.      American Electric Power Co., Inc.  
 RECIP.NAME      RECIPIENT AFFILIATION

SUBJECT: LER 96-001-00:on 960216,determined alarm setpoint of radiation monitor set incorrectly.Caused by failure to fully integrate regulatory requirements of 10CFR70.24 into plant design.Setpoint adjusted.W/960318 ltr.

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



March 18, 1996

United States Nuclear Regulatory Commission  
Document Control Desk  
Rockville, Maryland 20852

Operating Licenses DPR-58  
Docket No. 50-315

Document Control Manager:

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

96-001-00

Sincerely,

A handwritten signature in cursive script that reads "A. A. Blind".

A. A. Blind  
Site Vice President

/clc

Attachment

c: H. J. Miller, Region III  
E. E. Fitzpatrick  
P. A. Barrett  
R. F. Kroeger  
M. A. Bailey - Ft. Wayne  
S. J. Brewer  
J. R. Padgett  
G. Charnoff, Esq.  
D. Hahn  
Records Center, INPO  
NRC Resident Inspector

210021

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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 (HMBB 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 1DOCKET NUMBER (2)  
05000 315

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## TITLE (4)

Radiation Monitoring for New Fuel Vault Storage Area Found Not to Meet the Requirements of 10CFR70.24

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
02	16	96	96	-- 001 --	00	03	18	96	Cook Unit 2	05000 316
									FACILITY NAME	DOCKET NUMBER
OPERATING MODE (9)		1	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 70.24: (Check one or more) (11)							
POWER LEVEL (10)		100	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)		73.71(c)	
			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

Doug Noble, Radiation Protection Superintendent

TELEPHONE NUMBER (Include Area Code)

616/465-5901, x2527

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

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRPDS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRPDS

## SUPPLEMENTAL REPORT EXPECTED (14)

YES	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)

This is a follow-up report pursuant to the one-hour telephone notification made in accordance with 10 CFR 50.72(b)(ii)(B) on February 16, 1996. It was determined that due to the relative locations of monitor and stored assemblies, the requirements for detection of a postulated criticality accident in the New Fuel Storage Vault as stated in 10CFR70.24 were not met, and a condition outside the design bases therefore existed. It was later determined that the alarm setpoint of the radiation monitor was set incorrectly. The setpoint was adjusted per 10CFR 70.24(a)(2), and a follow-up call to the original notification was made.

Upon discovery of the condition, a fuel bundle was relocated to a position in the New Fuel Storage Vault (NFSV) where the monitor would detect a criticality accident. Subsequently, the monitor was relocated inside the NFSV and procedures were developed for calibration and response to the monitor.

This event is attributable to failure to fully integrate the regulatory requirements of 10CFR70.24 into the plant design bases via an accepted process. This resulted in the installation of monitoring that was not captured in either the modification process or on plant drawings.

This condition was determined to have little safety significance due to the design of the NFSV. The Westinghouse criticality analysis for this storage facility shows that the acceptance criteria for criticality is met for the storage of the Westinghouse fuel assemblies used in the cores of both Units 1 and 2. Based on this, it has been concluded that at no time was the health and safety of the public in jeopardy.

## LICENSEE EVENT CONTINUATION

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 (MNBB 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)		DOCKET NUMBER (2)		LER NUMBER (6)			PAGE (3)
Cook Nuclear Plant - Unit 1		0500 315		YEAR	SEQUENTIAL	REVISION	2 OF 3
				96	-- 001 --	00	

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

Conditions Prior to Occurrence

Unit 1 In Mode 1, at 100 percent Rated Thermal Power  
Unit 2 In Mode 1, at 100 percent Rated Thermal Power

Description of Event

On February 16, 1996, a preliminary calculation was performed that determined that in the event of a criticality accident in the New Fuel Storage Vault (NFSV) with a source term as described in 10CFR70.24, the dose rates at the installed criticality monitor would not exceed the low setpoint of the monitor, due to the location of the monitor relative to the stored assemblies. This constituted a non-compliance with 10CFR70.24, as this section of the Code requires that the monitor be located in such a manner so as to detect a criticality accident.

Upon discovery of this non-compliance, a fuel bundle was relocated to a position in the NFSV where the monitor would detect a criticality accident.

Subsequently, on February 20, 1996, the criticality monitor was found have an alarm setpoint of 1000 mR/hour, which is outside the range of 5 mR/hour to 20 mR/hour specified in 10 CFR 70.24(a)(2). The alarm setpoint was adjusted to 5 mR/hour to restore the monitor to operable status.

Cause of Event

This event is attributable to failure to fully integrate the regulatory requirements of 10CFR70.24 into the plant design bases via an accepted process, such as the design change process, when the requirements were originally recognized to be applicable in the 1970s. Subsequent decisions regarding the need for the monitor and its placement were also made without adequate investigations of the design basis for the monitor. This resulted in the installation of a monitoring system that did not achieve compliance with the regulatory basis, was not captured via the modification process or on plant drawings, and lacked a procedure for response to monitor alarms.

Analysis of Event

This event is being reported in accordance with 10 CFR 50.73(a)(2)(ii)(B), for a condition outside the design basis.

The design of the New Fuel Vault diminishes the probability for an accidental criticality within the New Fuel Vault. The New Fuel Vault as described in the plant's Technical Specifications (5.6.2.1) state:

"The new fuel pit storage racks are designed and shall be maintained with a nominal 21 inch center-to-center distance between new fuel assemblies such that  $k_{eff}$  will not exceed 0.98 when fuel assemblies are placed in the pit and aqueous foam moderation is assumed."

The Westinghouse criticality analysis for this storage facility shows that the acceptance criteria for criticality is met for the New Fuel Storage Vault (NFSV) for the storage of Westinghouse 15x15 assemblies, the 17x17 standard and optimized fuel assemblies, and VANTAGE 5 fuel assemblies, with the nominal enrichment limit of  $\leq 4.55$  w/o  $U^{235}$ .

All fuel assemblies stored in the NFSV have met the requirements, and based on this, it has been concluded that at no time was the health and safety of the public in jeopardy.

## LICENSEE EVENT CONTINUATION

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

Corrective Action

On March 1, 1996 administrative controls on placing fuel in the New Fuel Storage Vault were put in place. No fuel will be stored in the NFSV until all criticality monitoring issues are resolved.

A Temporary Modification was completed to install a radiation detector inside the New Fuel Vault. Instructions for the Radiation Protection technicians were developed to ensure that the radiation monitor is functional and that the alarm setpoint is in compliance with 70.24(a)(2), and compensatory actions have been prescribed if the monitor is not operable.

The Emergency Plan was modified to include actions for a confirmed criticality accident. This event will be considered when developing Emergency Plan drill scenarios.

A procedure was developed that provides guidance for Radiation Protection (RP) personnel when responding to an alarm from the accidental criticality radiation monitor. All RP personnel have been trained on the procedure and made familiar with its requirements.

Configuration control and design control practices are now proceduralized in the AEPSC General Procedures. The lessons learned from this event have already been formalized, therefore no new preventive actions are planned at this time.

New computer-aided mechanisms are available to check the license basis for the plant and the NRC regulation guidelines. These text search engines are available to the Nuclear Safety, Licensing and Fuels staff for this purpose. One is capable of searching AEP correspondence with the NRC, as well as the UFSAR, based on key words. Similarly, the other can be used to search the regulations in Title 10 of the Code of Federal Regulations, NRC Regulatory Guides, NRC Information Notices, and related documents for requirements based on key words. These systems are being used to assist in the determination of regulatory positions on issues as they emerge.

Failed Component Identification

N/A

Previous Similar Events

315/92-001-00