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FACIL: 50-315 Donald C. Cook Nuclear Power Plant, Unit 1, Indiana & 05000315
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RECIP. NAME RECIPIENT AFFILIATION

SUBJECT: LER 87-023-01: on 871109 problem discovered re fuses required for isolation between local shutdown & indication panels. Problems confirmed on 871222. Caused by engineer design oversight. Design changes mode. W/880218 ltr.

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TITLE: 50.73 Licensee Event Report (LER), Incident Rpt, etc.

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INDIANA MICHIGAN POWER

February 18, 1988

United States Nuclear Regulatory Commission
Document Control Desk
Washington, D.C. 20555

Operating License DPR-58
Docket No. 50-315

Document Control Manager:

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

87-023-01

Sincerely,

W. G. Smith, Jr.
Plant Manager

WGS:afh

Attachment

cc: D. H. Williams, Jr.
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NRC Form 366 (9-83)

U.S. NUCLEAR REGULATORY COMMISSION
APPROVED OMB NO. 3150-0104
EXPIRES: 8/31/88

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
D.C. Cook Nuclear Plant - Unit 1	0 5 0 0 0 3 1 5	1 OF 0 5

TITLE (4) Deficient Design Results in Failure to Provide Electrical Isolation Between Local Shutdown and Indication Panels

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 NAMES	DOCKET NUMBER(S)
1 1	0 9	8 7	8 7	0 2 3	0 1	0 2	1 8	8 8	D.C. Cook - Unit 2	0 5 0 0 0 3 1 6
										0 5 0 0 0

OPERATING MODE (9)	1
POWER LEVEL (10)	0 9 0

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)

	20.402(b)		20.405(c)		50.73(a)(2)(iv)		73.71(b)
	20.405(a)(1)(i)		50.36(c)(1)		50.73(a)(2)(v)		73.71(c)
	20.405(a)(1)(ii)		50.36(c)(2)		50.73(a)(2)(vii)		OTHER (Specify in Abstract below and in Text, NRC Form 366A)
	20.405(a)(1)(iii)	X	50.73(a)(2)(i)		50.73(a)(2)(viii)(A)		
	20.405(a)(1)(iv)		50.73(a)(2)(ii)		50.73(a)(2)(viii)(B)		
	20.405(a)(1)(v)		50.73(a)(2)(iii)		50.73(a)(2)(x)		

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER
T. P. Beilman	AREA CODE
Instrumentation & Control Department Superintendent	6 1 6 4 6 5 - 5 9 0 1

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)		EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
YES (If yes, complete EXPECTED SUBMISSION DATE)	X NO				

ABSTRACT (Limit to 1400 spaces, i.e., approximately fifteen single-space typewritten lines) (16)

The primary purpose of this supplemental report is to provide additional information regarding the sequence of events.

On November 9, 1987, during a review of an investigation concerning Regulatory Guide 1.97 compliance, it was discovered that a potential problem could exist involving the fuses required for isolation between the various Local Shutdown and Indication (LSI) panels (improperly located on Unit 2 and not incorporated into the existing design on Unit 1). On December 22, 1987 it was confirmed that a condition existed that, in the event of a fire local to a LSI panel, power (both normal and alternate) to some or all of the same units' remaining panels could have been lost.

The cause of the event was an oversight by design engineers in the design and verification process associated with the initial Appendix R modifications.

Fire watches were assigned to tour the affected areas. Design changes have been implemented which provide the necessary isolation in the event of a fire. To prevent recurrence the appropriate engineering procedures have been prefaced to address this specific electrical isolation concern.

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The primary purpose of this supplemental report is to provide additional information regarding the sequence of events leading up to the determination that the event was reportable.

Conditions Prior to Occurrence

(Conditions date of discovery)

Unit 1 - Mode 1 (power operation) - 90 percent Reactor Thermal Power

Unit 2 - Mode 1 (power operation) - 80 percent Reactor Thermal Power

Description of Event

On November 9, 1987, during an investigation into the feasibility of using existing Reactor Coolant System Wide Range T-Hot and T-Cold indications (EIIS/AB-TI) for Regulatory Guide 1.97 compliance,it was discovered that a potential problem could exist involving the fuses (EIIS/FU) required for isolation between the various Local Shutdown and Indication (LSI) panels (EIIS/PL) (improperly located on Unit 2 and not included in the existing design on Unit 1). On December 22, 1987 it was confirmed that a condition existed that, in the event of a fire local to an LSI panel, power (both normal and alternate) to some or all of the same units' remaining LSI panels could be lost. If power was lost to all panels, those indications available locally would be lost. In addition, all Wide Range T-Hot and T-Cold indications, 1 of 4 channels of pressurizer level indication (EIIS/AB-LI), and both trains of the Reactor Vessel Level Indication System (EIIS/AB-LI) would be lost in the control room. This condition is not consistent with the requirements of 10 CFR 50, Appendix R and has existed since initial installation of the Appendix R modifications (Unit 1 - September, 1985; Unit 2 - June, 1986).

With the exception of the subject LSI panels, there were no inoperable components, systems or structures that contributed to this event.

The following provides the reason for time between (1) the date (November 9, 1987) that the configuration(i.e., a potential problem with the electrical isolation between power feeds to

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

Description of Event - (Continued)

Local Shutdown Indication panels) was initially questioned and (2) the date (December 22, 1987) when the known problem was reported. Specifically, on November 9, 1987 the engineer who identified the concern initiated a Problem Report. Problem Reports are used to document either known nonconformances or potential nonconformances and to assure proper investigation into the documented concern. For the case reported in this LER, the engineer later concluded, on November 9, 1987, that the concern identified on the Problem Report was not a problem (i.e., a condition which was contrary to regulatory requirements was not identified). Therefore, the engineer did not forward the Problem Report to management. Approximately seven to nine days later, the engineer's supervisor questioned the engineer about the status of the concern. At that time (approximately November 18, 1987) the supervisor concluded that the electrical isolation concern may have an impact on regulatory (10 CFR 50, Appendix R) compliance. Therefore, the supervisor had the Problem Report forwarded to the appropriate management (Problem Assessment Group), so that an investigation would be conducted pursuant to the procedural requirements which govern such an investigation.

On December 21, 1987 engineering and licensing reviews concluded that even though certain process variables required by 10 CFR 50, Appendix R could be lost in certain fire scenarios, sufficient alternative information was still available. Therefore, it was concluded that a regulatory compliance problem did not exist. However, on December 22, 1987 it was concluded that a problem did exist. Specifically, a single fire might eliminate the redundant Alternative Shutdown Capability instrumentation required by 10 CFR 50 Appendix R, Section III.L. At this time (December 22, 1987), when this problem was first identified as reportable: (1) the requirements of 10 CFR 50.72 were fulfilled (1650 hours) and (2) a report per 10 CFR 50.73 was initiated.

In summary, on November 9, 1987, the engineer who had first questioned the LSI panel electrical isolation, concluded that a problem did not exist. On approximately November 18, 1987, the engineer's supervisor, through consultation with her assistant supervisor and a licensing engineer, concluded that the concern warranted formal investigation. On December 21, 1987 engineering and licensing concluded that the requirements of Appendix R were being fulfilled, in spite of electrical isolation concerns. On December 22, 1987, the conclusion was reached that certain concerns post-fire process variables (e.g., T-HOT and T-COLD) could not be assured. Therefore, appropriate reportability actions were initiated.

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

Cause of Event

The cause of the event was an oversight by design engineers in the design and verification process associated with the initial Appendix R modifications.

Analysis of Event

The condition is not consistent with the requirements of 10 CFR 50, Appendix R, and as such, is not consistent with our design basis. The event has been determined reportable per 10 CFR 50.73, (a)(2)(ii)(B). Appendix R requires that adequate instrumentation be available to ensure safe shutdown in the case of a single fire. If a fire at one of the LSI panels had led to the loss of power to all of one Units' LSI panels, Wide Range T-Hot and T-Cold indications would have been lost (both local and control room). According to IE Information Notice 84-09, these process variables are required for safe shutdown. However, sufficient information would have been available to the operator for achieving safe shutdown in the use of the in-core thermocouple indications and/or the use of main steam pressure and saturation temperature curves.

If power was lost to all LSI panels due to a fire at any LSI panel location, all indications on all LSI panels would be lost. However, with the exception of Wide Range T-Hot and T-Cold, all of the process variables indicated locally at the LSI panels would not be required locally due to their availability in the control room and the fact that a fire at any LSI panel location would not require remote shutdown.

Therefore, for the reasons detailed above, it has been concluded that the condition reported in this LER represents neither a significant risk to public health and safety, nor a significant degradation of our Appendix R safe shutdown capability.

Corrective Actions

Roving fire watches were assigned to tour the affected areas on December 22, 1987 (LSI panel locations within both units). The roving fire watches were upgraded to continuous fire watches on December 24, 1987. These steps were taken to serve as an interim compensatory action until the necessary design changes could be implemented.

For Unit 2, design changes were implemented December 30, 1987 that removed the improperly located fuses and installed replacements to remedy the inadequacy. For Unit 1, fuses were installed on

Corrective Actions - (Continued)

December 29, 1987. The existing configuration now provides the electrical isolation necessary in the event of a fire. We believe that this condition is an isolated event. Although consideration of 10 CFR 50, Appendix R electrical isolation criteria in the engineering and design process is required, additional emphasis will be placed on these electrical isolation requirements. The appropriate engineering procedures, dealing with Appendix R design details, have been prefaced (via a letter) to include this electrical isolation concern. The letter was reviewed during a monthly training session (01/21/88) attended by electrical engineering personnel.

Failed Component Identification

None

Previous Similar Events

None