



Nebraska Public Power District

COOPER NUCLEAR STATION
P.O. BOX 98, BROWNVILLE, NEBRASKA 68321
TELEPHONE (402) 825-3811

NLS940109

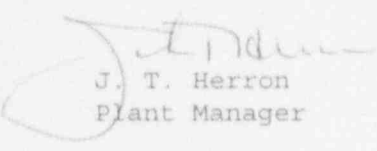
November 7, 1994

U.S. Nuclear Regulatory Commission
Document Control Desk
Washington, D.C. 20555

Dear Sir:

Cooper Nuclear Station Licensee Event Report 94-021 is forwarded as an attachment to this letter.

Sincerely,


J. T. Herron
Plant Manager

JTH/nr

Attachment

cc: L. J. Callan
G. R. Horn
J. H. Mueller
R. G. Jones
R. A. Sessoms
K. C. Walden
INPO Records Center
NRC Resident Inspector
R. J. Singer
CNS Training
CNS Quality Assurance

150125

cert# P038183304

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PDR ADDCK 0500029B
S PDR

JE27/1

LICENSEE EVENT REPORT (LER)

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

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)
COOPER NUCLEAR STATIONDOCKET NUMBER (2)
05000298PAGE (3)
1 OF 4

TITLE (4) Design error that allows spurious DG Room HVAC isolation during a fire or seismic event

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
10	07	94	94	-- 021 --	00	11	07	94	FACILITY NAME	DOCKET NUMBER
OPERATING MODE (9)		N	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 6: (Check one or more) (11)							
POWER LEVEL (10)		0	20.402(b)		20.405(c)		50.73(a)(2)(iv)		73.71(b)	
			20.405(a)(1)(i)		50.36(c)(1)		X 50.73(a)(2)(v)		73.71(c)	
			20.405(a)(1)(ii)		50.36(c)(2)		50.73(a)(2)(vii)		X OTHER	
			20.405(a)(1)(iii)		50.73(a)(2)(i)		50.73(a)(2)(viii)(A)		(Specify in	
			20.405(a)(1)(iv)		50.73(a)(2)(ii)		50.73(a)(2)(viii)(B)		Abstract below	
			20.405(a)(1)(v)		50.73(a)(2)(iii)		50.73(a)(2)(x)		and in Text, NRC Form 366A)	

LICENSEE CONTACT FOR THIS LER (12)

NAME
William Victor, Licensing EngineerTELEPHONE NUMBER (Include Area Code)
(402) 825-3811

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
B	KP	PS	C125	N					
B	KP	PS	C125	N					

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)

On October 7, 1994, a design flaw was discovered that could cause both Diesel Generators (DGs) to be rendered inoperable during a fire in the Turbine Building or a design basis earthquake. During either of these events the High Pressure Carbon Dioxide Extinguishing System (HPCDES), which protects the DG Rooms from fire, may erroneously isolate HVAC to both DG Rooms, thereby threatening DG operability.

The root cause of both design vulnerabilities is an inadequate HPCDES design change which relocated two essential components to the same fire area within a non-seismic structure [CAUSE CODE B].

Corrective actions include disabling the HPCDES input to the DG Room HVAC auto-isolation logic and stationing fire watches until a design change can be implemented that addresses the seismic and Appendix R concerns.

This LER also fulfills the Technical Specification 3.17.C requirement for a Special Report following HPCDES inoperability that exceeds 14 days.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

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COOPER NUCLEAR STATION	05000298	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	2 OF 4
		94	-- 021 --	00	

TEXT (If more space is required, use additional copies of NRC Form 366A) (17)

PLANT STATUS

The plant was in Cold Shutdown.

EVENT DESCRIPTION

The High Pressure Carbon Dioxide (CO₂) Extinguishing System (HPCDES) provides independent trains of fire protection to both DG [DG] Rooms. Upon system actuation, a CO₂ pressure switch [PS] in each train senses CO₂ pressure in the HPCDES discharge standpipe and isolates the respective DG Room HVAC (secures the supply and exhaust fans [FAN] and isolates the supply and exhaust dampers [DMP]), thereby preventing dilution of the CO₂ concentration.

On October 6, 1994, an open item was generated as part of the design basis reconstitution of the Fire Protection System, which noted that two opposite train HPCDES CO₂ pressure switches were both located in the same fire area, albeit in different fire zones. Assuming the worst case Appendix R fire in that area, both switches must be postulated to fail, and both trains of DG HVAC to isolate. The DGs require HVAC for continuing operability after DG initiation.

While assessing the significance of the Appendix R issue, it was realized that the pressure switches are located in a Seismic Category II structure (the Turbine Building). During a design basis seismic event, missiles from the Turbine Building must be postulated to impinge on both pressure switches such that a spurious signal is sent that isolates HVAC to both DG Rooms.

On 10/7/94, the condition was brought to the attention of the Shift Supervisor, who declared both DGs inoperable. A Notification of Unusual Event was made. Two Plant Temporary Modifications (PTMs) were performed that day to lift the wires to remove the pressure switches from the start logic of the DG Room HVAC System. Upon completion, the HPCDES was declared inoperable and a fire watch stationed. Both DGs were then returned to operability, and the Notification of Unusual Event was terminated.

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TEXT (If more space is required, use additional copies of NRC Form 366A) (17)

SAFETY SIGNIFICANCE

In the Appendix R fire scenario, there is minimal safety significance. The pressure switches are located in widely separated fire zones. This configuration makes it highly unlikely that a single fire would reach a sufficient intensity in both zones to render both pressure switches' fire-induced failure modes credible (cabling short to ground or an open circuit). Lastly, it is unlikely that a fire in the vicinity of the pressure switches would result in a loss of offsite power. The availability of offsite power obviates the need for the DGs in combating this casualty.

During a design basis earthquake, the DGs cannot be credited with operating for any significant length of time without HVAC. The loss of both DGs is significant to achieving and maintaining a safe shutdown condition. However, the CO₂ pressure switches and cabling are flush mounted on Seismic Category I walls (the Turbine Building side of the DG rooms), thereby presenting a particularly unlikely seismic target. The resulting low probability for this failure mode therefore provides substantial mitigation of the safety impact.

CAUSE

The cause of the Appendix R vulnerability was an improperly executed Minor Design Change (MDC) made in 1984. This MDC relocated both pressure switches from inside the respective DG Rooms to just outside the DG room fire doors to allow manual resetting without entering a potentially hostile environment. The CNS Appendix R Program was under development at that time, and a rigorous regimen had not yet been established which would screen proposed design changes against its criteria.

The cause of the seismic vulnerability was the implementation of the same MDC. It had been initiated, reviewed, and approved with a lack of sensitivity to seismic interactions that might affect key support systems, which ultimately could degrade the functionality of essential equipment.

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TEXT (If more space is required, use additional copies of NRC Form 366A) (17)

CORRECTIVE ACTION

The short term corrective action has been to disable the HPCDES isolation signal to the DG Room HVAC fan and damper control circuits. This action has rendered HPCDES inoperable since October 7, 1994, and a fire watch has been continuously stationed.

The long term corrective action for the Appendix R vulnerability is to:

1. Perform a design change that corrects this specific discrepant condition.
2. Review other design changes on a sampling basis that were performed prior to the implementation of explicit Appendix R controls in the design change process.

The long term corrective action for the seismic vulnerability is to:

1. Perform a design change that corrects this specific discrepant condition.
2. Conduct a search of the Equipment Data File to document the acceptability of other Essential components that are located in Seismic Category II structures.

Completion of the corrective design change is expected by February 1995, at which time HPCDES will be returned to operability.

SIMILAR EVENTS

LER 89-010: "Diesel Generator Room Ambient Temperature Control Inadequacies Identified During an NRC Inspection"