Nebraska Public Power District

COOPER NUCLEAR STATION
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CNSS913668

April 25, 1991

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

Dear Sir:

Cooper Nuclear Station Licensee Event Report 91-004, Revision 0, is being forwarded as an attachment to this letter.

Sincerely,

J. M. Meacham
Division Manager of
Nuclear Operations
Cooper Nuclear Station

JMM/bjs

Attachment

cc: R. D. Martin
G. R. Horn
R. E. Wilbur
V. L. Wolstenholm
D. A. Whitman
INPO Records Center
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R. J. Singer
CNS Training
CNS Quality Assurance

IE22

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)
Cooper Nuclear Station	0 5 0 0 0 2 9 8	1 OF 0 4

TITLE (4) Unplanned Automatic Startup of Diesel Generator Number 1 Caused by Inadequate Planning and Poor Communications During Drawing Verification Project Activities

EVENT DATE (5) MONTH	DAY	YEAR	LER NUMBER (6) YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	REPORT DATE (7) MONTH	DAY	YEAR	OTHER FACILITIES INVOLVED (8) FACILITY NAMES	DOCKET NUMBER(S)
0 3	2 6	9 1	9 1	— 0 0 4 —	0 0	0 4	2 5	9 1		0 5 0 0 0
										0 5 0 0 0

OPERATING MODE (9): N

POWER LEVEL (10): 0 0 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)	X	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)		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 AREA CODE	
Donald L. Reeves, Jr.	4 0 2	8 2 5 - 3 8 1 1

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

CAUSE	SYSTEM	COMPONENT	MANUFAC-TURER	REPORTABLE TO NPRDS	CAUSE	SYSTEM	COMPONENT	MANUFAC-TURER	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)

On March 26, 1991 at 9:26 am, Diesel Generator Number 1 (DG #1) automatically started, but was not required to load, when the fuse block for the 4160v 1A Bus undervoltage protection circuit was pulled during Drawing Verification Project activities. As a result of the circuit being deenergized, 4160v Breaker 1AF opened, deenergizing the 4160v 1F Critical Bus. This resulted in the receipt of an automatic start signal by DG #1, closure of several Primary Containment Isolation valves associated with Groups III and VI, and load shedding of pumps and load centers powered from the 4160v 1F Critical Bus. The Bus was automatically repowered from the Emergency Transformer, as designed. At the time of the event, the plant was shutdown, with the Residual Heat Removal (RHR) System in the Shutdown Cooling mode of operation. Reactor water temperature was 137 degrees Fahrenheit.

The cause of these unplanned actions was due to personnel error, coupled with inadequate communications and human factors considerations. The potential for, and impact of, losing the undervoltage protection circuitry had not been properly assessed by project personnel. The Shift Supervisor understood that the fuse was associated with the 1A Condensate Pump. The location of the fuse in the 1A Condensate Pump Switchgear compounded the communications and assessment deficiencies.

Corrective action was taken to restore Shutdown Cooling and realign systems to their prior configuration. "Hands-on" Drawing Verification Project activities were abated until such time as project instructions providing improved guidance associated with verification activities on energized circuits and familiarization of personnel with the improved guidance could be instituted.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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

A. Event Description

On March 26, 1991 at 9:26 am, Diesel Generator Number 1 (DG #1) automatically started, but was not required to load, when the undervoltage protection circuit for 4160v Bus 1A was inadvertently deenergized during Drawing Verification Project activities. The circuit was deenergized when fuse block 'NM' was pulled with the intention of verifying fuse sizes. Upon deenergizing the circuit, 4160v Breaker 1AF opened, deenergizing the 4160v 1F Critical Bus. After a time delay of approximately one (1) second designed to ensure that load shedding occurs, 4160v Breaker 1FS closed, repowering the Bus from the Emergency Transformer. The power interruption to the 1F Bus resulted in the receipt of an automatic start signal by DG #1. Additionally, the following actuations of safety related components occurred:

- Closure of six (6) Containment Isolation Valves which were open, supplying air to and exhausting air from the Primary Containment. These valves are among those normally actuated upon receipt of a Group VI Isolation, an Engineered Safety Feature. A Group VI Isolation, however, did not occur.

- Actuation of one half of the Group III Isolation circuit (the A side) and closure of the inboard Reactor Water Cleanup (RWCU) System isolation valve, RWCU-MOV-MO15. This effectively resulted in a Group III Isolation, also an Engineered Safety Feature.

- Deenergizing Residual Heat Removal (RHR) Pump 1A and RHR Service Water Booster Pump 1A which were in operation in the Shutdown Cooling mode of operation.

- Deenergizing Service Water Pump A. Service Water Pumps B & D, powered from the 4160v 1G Critical Bus, remained in operation.

- Tripping of the Electrical Protection Assembly (EPA) installed to monitor backup AC power to the 1A Reactor Protection System.

The 1A Service Water Pump automatically restarted 15 seconds after being deenergized (load shed). Shortly thereafter, Control Room Operators restored Shutdown Cooling by restarting the 1A RHR Pump and 1A RHR Service Water Booster Pump. Subsequently, the Containment Isolation Valves were reopened and DG #1 was restored to its normal standby condition. Following verification that pulling the NM fuses would result in deenergizing the 4160v 1A Bus undervoltage circuit, and that the 4160v 1AF and 1FS Breakers functioned as designed, the fuses were reinstalled and normal power was restored to the 4160v Buses.

B. Plant Status

The plant was shutdown, with all control rods inserted, the Reactor Mode Switch in REFUEL, and the Reactor Vessel vented. Loop A of the RHR System was in the Shutdown Cooling mode of operation with reactor water temperature of 137 degrees Fahrenheit.

C. Basis for Report

An unplanned start of DG #1 and unplanned actuation of ESF components (Reactor Coolant System and Primary Containment Isolation valves), reportable in accordance with 10CFR50.73(a)(2)(iv).

D. Cause

Personnel error coupled with inadequate communications and human factors considerations. The 'NM' fuse block, which supplies power to the 1A Bus Undervoltage Protection Circuit, is physically located in the upper cabinet of the 1A Condensate Pump Breaker Switchgear. Contract personnel responsible for performing the drawing verification did not adequately research the function of the fuses prior to obtaining the Shift Supervisor's permission to pull and check the fuses.

When the Shift Supervisor was approached to obtain his approval, he understood that the fuse was associated with the 1A Condensate Pump. The approval document signed by the Shift Supervisor further reinforced this impression, since it identified only the location of the fuse block, not its function.

E. Safety Significance

No significant effect. None of the actuations that occurred caused the plant to experience any operational or safety related problems or resulted in identifying any potential safety concerns. Upon deenergizing the 4160v 1A Bus Undervoltage Protection Circuit, 4160v Breakers 1AF and 1FS actuated as designed, reenergizing the 4160v 1F Critical Bus from the Emergency Transformer. Load shedding from the 4160v 1F Bus functioned correctly and the diesel generator automatically started as expected.

F. Safety Implications

While a variety of Drawing Verification Project activities are permitted during plant operation, deenergizing circuits by removal of fuses is not. Nevertheless, had this circuit been deenergized with the plant at full power, the 1A Condensate and Condensate Booster Pumps, powered from the 4160v 1A Bus, would have tripped. If immediate operator action were not taken to reduce reactor power, this would have resulted in a subsequent trip of one or both Reactor Feedwater Pumps due to low suction pressure. A reactor scram due to low Reactor Vessel water would, most likely, have resulted.

NRC FORM 366A (6-89)

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED OMB NO. 3150-0104
EXPIRES: 4/30/92

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (P-530), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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

G. Corrective Action

As noted in paragraph A, Event Description, immediate corrective action was taken to restore Shutdown Cooling and realign plant systems to their prior condition. Additionally, all Drawing Verification Project activities that potentially involved "hands-on" activities have been suspended until corrective actions to prevent recurrence are implemented. These corrective actions include upgrading of the project instructions to provide improved guidance for Drawing Verification Project activities associated with energized circuits, and familiarization of personnel involved in project activities with the upgraded requirements. Upon satisfactory completion of these actions, authorization for "hands-on" activities will be reinstated.

H. Similar Events

None.