

## LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) Cooper Nuclear Station										DOCKET NUMBER (2) 0 5 0 0 0 2 9 8 1				PAGE (3) 1 OF 0 3									
TITLE (4) Loss of 4160 VAC 1G Bus During Design Change Installation Due To Inadvertent Trip Circuit Actuation																							
EVENT DATE (6)			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)										
0	3	2	8	9	3	0	0	8	0	0	0	4	2	2	9	3	0	5	0	0	0	0	0
OPERATING MODE (9)		THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR § (Check one or more of the following) (11)																					
N		20.402(b)				20.406(c)				<input checked="" type="checkbox"/> 60.73(e)(2)(iv)				73.71(b)									
POWER LEVEL (10)		0 1 0 0				20.406(a)(1)(i)				60.73(e)(2)(v)				73.71(c)									
		20.406(a)(1)(ii)				60.73(e)(2)(vi)				60.73(e)(2)(vii)(A)				OTHER (Specify in Abstract below and in Text, NRC Form 366A)									
		20.406(a)(1)(iii)				60.73(e)(2)(viii)(B)				60.73(e)(2)(ix)													
		20.406(a)(1)(iv)				60.73(e)(2)(x)																	
		20.406(a)(1)(v)				60.73(e)(2)(xi)																	
LICENSEE CONTACT FOR THIS LER (12)																							
NAME Donald L. Reeves, Jr.										TELEPHONE NUMBER 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	MANUFACTURER	REPORTABLE TO NRC		CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRC													
SUPPLEMENTAL REPORT EXPECTED (14)										EXPECTED SUBMISSION DATE (15)		MONTH	DAY	YEAR									
<input type="checkbox"/> YES (If yes, complete EXPECTED SUBMISSION DATE)										<input checked="" type="checkbox"/> NO													

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

On March 28, 1993, at 3:46 pm, during installation of an overvoltage relay on 4160 VAC breaker 1GS control cubicle door, 4160 VAC breakers 1BG, 1GB and 1GE were tripped due to actuation of the 1GS breaker lockout relay. The relay was inadvertently tripped when one of the three phase overcurrent (51) protective relays located on the 1GS control cubicle door actuated. The trip of the 1GB breaker resulted in the 4160 VAC 1G Bus being de-energized for approximately 10 minutes and a corresponding 1/2 Group 1 Isolation, 1/2 scram, and Groups 2, 3, 6, and 7 Isolations. Additionally, Spent Fuel Pool cooling was interrupted for an approximate five minute time frame. At the time of the event, the plant was in Cold Shutdown for the 1993 Refueling Outage.

The cause of the event was due to an oversight in the Design Change (DC) installation instructions. When the instructions were written, operation of the 51 relays caused by cabinet vibration or jarring during overvoltage relay installation was judged to not be a problem as 51 relay operation requires disc rotation of approximately 90 degrees to achieve contact closure. Considering relay disc rotation to not be of concern, installation instructions did not specify de-energizing the relay logic circuit until electrical installation of the overvoltage relay was to begin.

The step de-energizing the lockout circuit was moved ahead of the steps addressing overvoltage relay installation. The relay installations were completed in both divisions without further incident. This event will be reviewed with design engineers to emphasize the need for conservative decision making.

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TEXT (If more space is required, use additional NRC Form 365A's) (17)

A. Event Description

On March 28, 1993, at 3:46 pm, during installation of an overvoltage relay on 4160 VAC breaker 1GS control cubicle door, 4160 VAC breakers 1BG, 1GB and 1GE tripped due to actuation of the 1GS breaker lockout relay. The 1GS breaker lockout relay was inadvertently tripped during overvoltage relay installation when one of the three phase overcurrent (51) protective relays located on the 1GS control cubicle door actuated. The overvoltage relay was being installed in accordance with Emergency Transformer Replacement Design Change (DC) installation instructions. The breaker trips resulted in the 4160 VAC 1G Bus being de-energized for approximately 10 minutes and a corresponding 1/2 Group 1 Isolation, 1/2 scram, and Groups 2, 3, 6, and 7 Isolations (Primary Containment, Reactor Water Cleanup (RWCU), Secondary Containment, including Standby Gas Treatment (SGT) initiation, and Reactor Water Sampling). Additionally, Spent Fuel Pool cooling was interrupted for approximately five minutes.

B. Plant Status

Cold Shutdown for the 1993 Refueling Outage. At the time of the trip, Diesel Generator (DG) No. 2 was paralleled to the grid and loaded at 1000 KW in preparation for a 24 hour run conducted as post-maintenance testing (PMT).

C. Basis for Report

An unplanned automatic actuation of ESF Groups 2, 3, 6, and 7 Isolations, reportable in accordance with 10CFR50.73(a)(2)(iv).

D. Cause

Design; specifically, the DC installation instructions. The possibility that the 51 protective relays might trip during overvoltage relay installation was misjudged. These GE IAC53 type relays operate on an induction disk principle. One trip contact is mounted on the shaft of an induction disk. With the existing setting of these relays, this disk must rotate approximately 90 degrees to provide a trip signal. When the design change installation instructions were written, disk rotation resulting in an inadvertent trip was judged to be implausible during overvoltage relay installation. However, during installation, the jarring and vibration of the cubicle door unexpectedly caused one of the three relay disks to rotate so that its contacts closed.

## LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED OMB NO. 3150-0104

EXPIRES: 8/31/88

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TEXT (If more space is required, use additional NRC Form 306A's) (17)

E. Safety Significance

The safety significance of the 4160 VAC 1G Bus (Division II) being de-energized was minimal. The plant was in Cold Shutdown with fuel removed from the vessel. While the Division II electrical system was in service, it was not considered the primary power source since DG No. 2 had not yet been returned to service following overhaul. As previously noted, the DG had been started and was operating in parallel with the grid at 1000 KW in preparation for a 24 hour PMT run. While group isolations occurred and functioned as designed, ongoing outage activities were not affected.

The 4160 VAC 1G Bus was de-energized for approximately ten minutes. Initially, Spent Fuel Pool cooling was lost due to the loss of flow instrumentation, causing the filter-demineralizer outlet valves to close. An operator was immediately dispatched to open the bypass valve around the filter-demineralizers. It is estimated that Spent Fuel Pool cooling flow was restored in approximately five minutes. The effect of the flow interruption on Spent Fuel Pool temperature was negligible. At 3:56 pm, the 1GS breaker lockout relay was reset and the 1GE breaker automatically closed, repowering the 1G Bus. Normal breaker lineup was restored at 4:01 pm.

F. Safety Implications

The activities associated with installation of the overvoltage relays that caused the loss of the 4160 VAC 1G Bus would only have been performed during Cold Shutdown. Therefore, for this type of activity, shutdown conditions would be the worst case initial plant conditions.

G. Corrective Action

The work was stopped and a change to the DC was made and approved to move the step de-energizing the lockout circuit ahead of the step for overvoltage relay installation. Work was restarted and both divisions of overvoltage relay installations were completed without further incident.

This event will be reviewed with all design engineering personnel to emphasize the need for conservative decision making during development of DC installation instructions.

H. Similar Events

None