

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) Cooper Nuclear Station	DOCKET NUMBER (2) 0 5 0 0 0 2 9 8	PAGE (3) 1 OF 0 4
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TITLE (4) Unplanned Actuations of Groups 2 and 6 Isolations Due to Personnel Error and Human Factors Deficiencies

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											
0	4	2	6	8	8	8	8	8	0	1	3	0	0	0	0	5	0	0	0	0

OPERATING MODE (9) N	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR § (Check one or more of the following) (11)																					
POWER LEVEL (10) 0 0 0	20.402(b)	20.406(a)(1)(i)	20.406(a)(1)(ii)	20.406(a)(1)(iii)	20.406(a)(1)(iv)	20.406(a)(1)(v)	20.406(c)	50.36(c)(1)	50.36(c)(2)	50.73(a)(2)(i)	50.73(a)(2)(ii)	50.73(a)(2)(iii)	50.73(a)(2)(iv)	50.73(a)(2)(v)	50.73(a)(2)(vi)	50.73(a)(2)(vii)(A)	50.73(a)(2)(vii)(B)	50.73(a)(2)(x)	73.71(b)	73.71(c)	OTHER (Specify in Abstract below and in Text, NRC Form 365A)	

LICENSEE CONTACT FOR THIS LER (12)

NAME Donald L. Reeves, Jr.	TELEPHONE NUMBER AREA CODE: 4 0 2 4 0 2 8 2 5 - 3 8 1 1
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COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRRDS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRRDS

SUPPLEMENTAL REPORT EXPECTED (14)

YES (If yes, complete EXPECTED SUBMISSION DATE:)	<input checked="" type="checkbox"/> NO	EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR

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

On April 26, 1988, two unplanned actuations of Groups 2 and 6 Isolations (Primary Containment Isolation and Secondary Containment Isolation, including Standby Gas Treatment [SGT] System initiation, respectively) occurred during performance of Reactor Protection System (RPS) HFA relay maintenance. Both events occurred when neutral lead connections for relay 5A-K3B (one of eight Main Steam Isolation Valve [MSIV] closure scram relays) were disconnected. Due to the neutral lead wiring configuration which involves daisy chaining of the neutral connections from several relays, interruption of the neutral lead circuit will result in de-energizing one or more relays. In both situations, Drywell High Pressure relay 5A-K4B was also de-energized. This resulted in actuation of Primary Containment Isolation System (PCIS) logic Channel B. At the time, PCIS Channel A was also in a tripped condition, and as a result, the Groups 2 and 6 Isolations occurred.

The cause of the first trip was due to overlooking the interaction between the RPS HFA relays and PCIS. The second trip was due to the neutral lead being pulled free from a compression type connection during wiring verification.

Corrective action taken included installation of jumpers to preserve the neutral connection circuit prior to subsequent removal of relays for maintenance, and checking all neutral bus bar compression type connections for tightness. Additional corrective action will include reviewing and revising, as necessary, the existing Maintenance Procedure governing relay removal/installation activities and dissemination of information regarding this event to appropriate plant personnel.

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TEXT (if more space is required, use additional NRC Form 305A's) (17)

A. Event Description

On April 26, at 9:31 A.M. and, again, at 10:24 A.M. while shutdown for the 1988 Refueling Outage, unplanned actuations of Groups 2 and 6 Isolations (Primary Containment Isolation and Secondary Containment Isolation, including Standby Gas Treatment [SGT] System initiation, respectively) occurred during performance of Reactor Protection System HFA relay maintenance. The first actuation occurred when the neutral lead was removed from relay 5A-K3B, one of eight relays associated with the Main Steam Isolation Valve (MSIV) closure scram. Due to the installed wiring configuration wherein neutral leads from several relays are daisy chained together, relay 5A-K4B, a Drywell High Pressure relay, was also de-energized. Consequently, a trip signal was input into the Primary Containment Isolation System (PCIS) B logic system. Due to the fact that the PCIS A logic system had already been placed in a tripped condition for a design change activity, a full Group 2 and Group 6 Isolation occurred.

The second trip occurred when the neutral lead for relay 5A-K3B was being traced. This was being done as a means of verifying the accuracy of the wiring diagram, prior to installation of a jumper to preserve the neutral daisy chain for the other relays involved. However, in checking the neutral lead wiring, the neutral lead for relay 5A-K3B was inadvertently pulled free from its compression type connection to the neutral bus bar. Again, relay 5A-K4B was de-energized, resulting in actuation of Groups 2 and 6 Isolations.

B. Plant Status

Shutdown for the 1988 Refueling Outage which had commenced March 5, 1988. At the time of these events, both RPS Systems were in a tripped condition to facilitate outage modification activities. Additionally, as previously noted, PCIS Channel A logic system was also in a tripped condition to enable implementation of a design change activity.

C. Basis for Report

Unplanned actuations of Engineered Safety Features (Groups 2 and 6 Isolations), reportable in accordance with 10CFR50.73(a)(2)(iv).

D. Cause

The cause of the first trip was due to an error on the part of Engineering personnel involved when establishing jumpering requirements for relay replacement. In accordance with the requirements specified in Maintenance Procedure (MP) 7.3.16, Low Voltage Relay Removal and Installation, the temporary modifications (jumper installation, lifted leads, fuse removal) to be implemented prior to relay removal were identified by Engineering. During this process, the Engineer, in consultation with a Licensed Operator, considered the need for

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installing jumpers to preserve the neutral daisy chain for the other relays involved. At the time, both RPS Systems were in a tripped condition to facilitate installation of a design change. In this condition, the use of jumpers (to preserve the neutral daisy chain) was not considered necessary since the RPS was already in a tripped condition. However, the interaction of relay 5A-K4B in the PCIS Logic circuit was not considered. Consequently, when the neutral lead for relay 5A-K3B was lifted, relay 5A-K4B was also de-energized and the affected PCIS Logic train (System B) was actuated. With PCIS logic system A already tripped, a full Group 2 and 6 Isolation resulted.

The cause of the second trip was due to the difficulty experienced by the utility Electrician in tracing the path taken by the neutral lead for relay 5A-K3B in the "nest" of relay leads within the cabinet. This difficulty is considered to be a human factors deficiency. When the relay lead within the "nest" was moved to permit visual tracing, it was unintentionally pulled out of the neutral bus bar compression type connection.

E. Safety Significance

None. Other than loss of normal Reactor Building ventilation, there were no related plant effects. With respect to the potential for this event to occur while at power, during power operation, RPS HFA relay maintenance activities would not be scheduled. However, had there been a problem (while at power) which required replacement of a HFA relay; e.g., 5A-K3B, the neutral daisy chain jumpering requirements prescribed in Maintenance Procedure 7.3.16 would have been accomplished. In the event that during this activity, the neutral lead had become disconnected from the neutral bus bar, only one of the two PCIS logic circuits would have been affected. Consequently, the Group Isolations would not have occurred.

F. Corrective Action

Following each event, the neutral circuit continuity was re-established, the isolations were reset, and system alignments were restored to their respective pre-tripped conditions. Immediate corrective action taken following the first event included the steps being taken which led to the second event; i.e. the investigation to determine proper neutral lead jumper installation. Immediate corrective action taken as a result of the second event included a check of all relay neutral lead to bus bar compression type connections to ensure their tightness.

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Additional corrective action to be taken includes reviewing and revising, as necessary, the guidance in Maintenance Procedure 7.3.16 regarding relay removal/installation activities. Additionally, information regarding this event will be disseminated to Engineering, Electrical Maintenance, and Operations Department personnel as a reminder that the potential for systems interactions needs to be carefully researched when maintenance activities of this nature are planned.

G. Past Similar Events

This is the first instance where a system interaction problem of this nature occurred and was required to be reported as an LER.



Nebraska Public Power District

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CNSS886134

May 26, 1988

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

Dear Sir:

Cooper Nuclear Station Licensee Event Report 88-013 is forwarded as an attachment to this letter.

Sincerely,

G. K. Horn
Division Manager of
Nuclear Operations
Cooper Nuclear Station

GRH:sg

Attachment

cc: R. D. Martin
L. G. Kunc1
K. C. Walden
C. M. Kuta
R. J. Singer
INPO Records Center
ANI Library
NRC Resident Inspector

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