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 Actuation of Engineered Safety Features Due to Human Errors During Surveillance Testing

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)
										0 5 0 0 0
0 5	2 6	8 8	8 8	0 1 7	0 0	0 6	2 7	8 8		0 5 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)	20.405(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	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)

On May 26, 1988, two unplanned actuations of Engineered Safety Features (ESFs) occurred while performing a recently revised surveillance test to verify the integrity of all circuits which initiate starting of the Diesel Generators (DGs). At the time of the performance of these tests, the reactor was shutdown and activities were in progress to recover from the 1988 Refueling Outage which had commenced March 5, 1988.

The first ESF actuation involved an unplanned start of DG #1 when the starting circuit for DG #2 was being checked. The cause was due to jumper installation in the 1AN Breaker Cubicle in lieu of the 1BN Breaker Cubicle. The second ESF actuation involved an unplanned start of Core Spray (CS) Pump B. The cause was due to selecting the wrong relay (one mounted below the nameplate identifier as opposed to the one above) for installation of relay contact blocks.

Personnel error and human factors deficiencies are considered to be the root causes of these events. Corrective actions taken after each unplanned actuation included a review of the procedural steps by test personnel, a discussion regarding the error(s) made and re-performance of the test steps correctly. Subsequent to completion of the test, the test engineer was counselled by his manager. Additionally, human factor considerations for performance of the DG starting circuit surveillance test are presently being evaluated.

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Cooper Nuclear Station	0 5 0 0 0 2 9 8	8 8	— 0 1 7	— 0 0	0 2 OF 0 4

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

A. Event Description

On May 26, 1988, two unplanned actuations of Engineered Safety Features (ESFs) occurred while performing a surveillance test. The surveillance test in progress (Surveillance Procedure 6.3.12.7, Diesel Generators Automatic Start Circuits Integrity Test) is conducted at a yearly frequency to verify the integrity of all circuits which initiate automatic starting of the Diesel Generators (DG). Actual starting of the Diesel Generator being tested is blocked during performance of the test to minimize the number of unnecessary actuations. The surveillance procedure had recently been rewritten to modify the method for test performance as a result of comments received during the NRC Safety System Functional Inspection (SSFI). Previously, testing had been accomplished by jumpering individual contacts in the DG starting circuit logic. As rewritten, the test method was modified to actuate the relays associated with the individual DG starting logic contacts as a means to verify correct relay and relay contact actuation. Depending on the particular relay actuation desired, this involved installation of jumpers, fuse removal and/or installation of relay contact blocks. Consequently, the testing complexity (and the potential for human error) was increased substantially. This was the first actual performance of the approved revised test procedure.

The first ESF actuation occurred at 1:42 P.M. when DG #2 was being tested. The portion of the circuit being checked was associated with the automatic trip function of 4160V Breaker 1BN and involved jumpering two contacts to simulate trip of the breaker. However, in lieu of correctly installing the jumper in the 1BN Breaker Cubicle, the jumper was mistakenly installed between the identical two points in the 1AN Breaker Cubicle. As a result, DG #1 started. Normal power, however, remained available. Additionally, the alternate power source for the 1F 4160V critical bus from the Emergency Transformers remained available. Therefore, the diesel started and was not loaded. Subsequently, the unit was secured and was returned to its normal Standby mode.

Testing was continued to the point where DG actuation due to an ECCS actuation signal (High Drywell Pressure or Low Reactor Vessel Water Level) was being tested. As a prerequisite before installing a jumper to simulate the actuation signal, two relay contact blocks, one of which was intended to prevent start of the 1B Core Spray (CS) Pump were to be installed. The one block to be installed to prevent start of the CS Pump was supposed to be placed on contacts 7 and 8 of relay 14A-K10B. However, when the engineer who had rewritten the test procedure identified the relay to be blocked, he mistakenly identified the relay (14A-K11B) physically located below the nameplate identifier instead of the relay above the nameplate (14A-K10B). As a result of the proper contacts not being blocked, at 2:30 P.M. the 1B CS Pump started, and the injection valve, CS-MOV-M012B, opened. Approximately 2000 gallons of water (a ten inch Reactor Vessel level increase) was injected into the

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Cooper Nuclear Station	0 5 0 0 0 2 9 8	8 8	— 0 1 7	— 0 0	0 3 OF 0 4

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

Reactor Vessel before the pump was secured and injection valve closed. Subsequently, the jumper was removed, the contact block was removed from relay 14A-K11B and the Core Spray System returned to its normal Standby mode.

B. Plant Condition

Shutdown for the 1988 Refueling Outage which had commenced March 5, 1988.

C. Basis for Report

Automatic actuations of ESFs, reportable in accordance with 10CFR50.73(a)(2)(iv).

D. Cause

Personnel error and human factors deficiencies have been established as the principle root causes of these events. The engineer involved in directing test performance was distracted, to an extent, due to an apparent desire to proceed expeditiously through the procedure so as not to impact other outage related activities. The fact that this was the first time of test performance was also clearly a factor in this event.

From a human factors perspective, while the procedure was technically correct, the test required a number of jumper installations and blocking of relay contacts. Therefore, inattention to detail and human factor deficiencies would appear to be the basic root cause of these events.

E. Safety Consequences

None. Upon being actuated, the Diesel Generator and Core Spray Pump started as designed. Upon start of the CS Pump, approximately ten inches of water were injected into the Reactor Vessel from the Torus. No adverse effects resulted from this event.

F. Safety Implications

None. This test would only be conducted while shutdown. This requirement is, in fact, stated as a prerequisite in the procedure. Therefore, this event would not occur duing power operation.

G. Corrective Action

The associated procedural steps were reviewed by test personnel, the error(s) made were discussed and the test steps were reperformed correctly. Consequently, it was confirmed that the test procedure, as written, was technically correct and adequate for test performance. Subsequent to the test completion, the test engineer was counselled by his manager. Emphasized was the need to be deliberate and cautious, to

stop and investigate discrepancies when discovered, and after becoming involved in technical details, to re-verify that procedural steps have been satisfactorily completed before proceeding.

Additionally, human factor considerations for performance of the DG starting circuit surveillance test are presently being evaluated and any necessary upgrades to enhance its performance will be implemented.

H. Past Similar Events

Similar events which have occurred in the past and which were reported as LERs include:

LER 87-008 dated February 26, 1987, Unplanned Actuation of Group 6 Isolation Due to Personnel Error While Calibrating Area Radiation Monitors.

LER 87-012 dated June 15, 1987, Unplanned Actuation of Group 1 Isolation Valves During Surveillance Testing Due to Operator Error.

LER 87-022 dated October 15, 1987, Unplanned Closure of RWCU Isolation Valve Due to Personnel Error During Surveillance Testing.

Nebraska Public Power District

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

CNSS886175

June 27, 1988

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

Gentlemen:

Cooper Nuclear Station Licensee Event Report 88-017 is forwarded as an attachment to this letter.

Sincerely,

G. R. Horn
Division Manager of
Nuclear Operations

GRH:sg

Attachments

cc: R. D. Martin
L. G. Kuncl
R. E. Wilbur
V. L. Wolstenholm
G. A. Trevors
INPO Records Center
ANI Library
NRC Resident Inspector
R. J. Singer
CNS Training
CNS Quality Assurance

IE22
1/1