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FACIL:50-400 Shearon Harris Nuclear Power Plant, Unit 1, Carolina 05000400
AUTH.NAME AUTHOR AFFILIATION
VERILLI,M. Carolina Power & Light Co.
ROBINSON,W.R. Carolina Power & Light Co.
RECIP.NAME RECIPIENT AFFILIATION

SUBJECT: LER 93-007-01:on 930523,unplanned ESF actuation occurred due to improper alignment of MOC switch.Performed insp to other 6.9 KV breakers.W/930825 ltr.

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TITLE: 50.73/50.9 Licensee Event Report (LER), Incident Rpt, etc.

NOTES:Application for permit renewal filed. 05000400

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CP&L
Carolina Power & Light Company

HARRIS NUCLEAR PLANT
P.O. Box 165
New Hill, North Carolina 27562

AUG 2 5 1993

Letter Number: HO-930149

U.S. Nuclear Regulatory Commission
ATTN: NRC Document Control Desk
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SHEARON HARRIS NUCLEAR POWER PLANT UNIT 1
DOCKET NO. 50-400
LICENSE NO. NPF-63
LICENSEE EVENT REPORT 93-007-01

Gentlemen:

In accordance with Title 10 to the Code of Federal Regulations, the enclosed Licensee Event Report is submitted. The original report fulfilled the requirement for a written report within thirty (30) days of a reportable occurrence. This supplement is being submitted to provide additional information related to the unplanned Engineered Safety Feature actuation described in the original report. This report is in accordance with the format set forth in NUREG-1022, September 1983.

Very truly yours,

W. R. Robinson
General Manager
Harris Nuclear Plant

MV:smh

Enclosure

c: Mr. S. D. Ebneter (NRC - RII)
Mr. N. B. Le (NRC - PM/NRR)
Mr. J. E. Tedrow (NRC - SHNPP)

360093

MEM/LER93-007.1/1/OS1

IE22 1/1

NRC FORM 366 (5-92) | U.S. NUCLEAR REGULATORY COMMISSION | APPROVED BY OMB NO. 3150-0104 EXPIRES 5/31/95

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 (MNBB 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)	DOCKET NUMBER (2)	PAGE (3)
Shearon Harris Nuclear Plant-Unit #1	05000/400	1 OF 4

TITLE (4) Unplanned Engineered Safety Feature Actuation when "B" Emergency Diesel Generator started on loss of power to the 1B-SB Safety Bus.

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
5	23	93	93	-- 007 --	01	8	23	93		05000
									FACILITY NAME	DOCKET NUMBER 05000

OPERATING MODE (9)	1
POWER LEVEL (10)	15%

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (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
	20.405(a)(1)(iii)		50.73(a)(2)(i)	50.73(a)(2)(viii)(A)	(Specify in Abstract below and in Text, NRC Form 366A)
	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 (Include Area Code)
Michael Verrilli	(919) 362-2303

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	KM	CL	B455	Y						

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 15 single-spaced typewritten lines) (16)

On May 23, 1993 the Startup Transformer to Auxiliary Bus E supply breaker 121 failed to open automatically when the corresponding Auxiliary Transformer supply breaker 122 was closed. This resulted in both transformers feeding the same bus. After troubleshooting, recommendations were made and action taken to manually open breaker 121. Upon opening breaker 121, emergency bus B-SB supply breaker 125 opened on interlock resulting in deenergizing of the B-SB bus and automatic start and loading of the 'B' Emergency Diesel Generator (EDG). The Auxiliary Feedwater System turbine driven and "B" motor driven pumps started at this point, as required and were subsequently secured to stabilize steam generator levels. A Containment Ventilation Isolation Signal also occurred during the transient due to the failure of a radiation monitor supply power fuse. Breaker 121 failed to automatically open due to a misaligned Mechanism Operated Cell (MOC) switch in breaker 122, which defeated the auto-open interlock. The cause of this event was determined to be insufficient training and procedural controls to ensure that the MOC switch was properly aligned following maintenance.

Corrective actions will include training, procedure revisions and enhancements to ensure proper MOC switch alignment in applicable breakers. This event is being reported per 10CFR50.72(a)(2)(iv) as an unplanned actuation of an Engineered Safety Feature.

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Shearon Harris Nuclear Plant Unit #1	05000/400	93	007	01	2 OF 4

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

EVENT DESCRIPTION:

On May 23, 1993 during power ascension following a one day outage, Operators were swapping auxiliary loads from the Startup Transformers (SUTs) to Unit Auxiliary Transformers (UATs). At 1555 while attempting to swap the loads on Auxiliary Bus 'E', the SUT to Bus 'E' supply breaker 121 failed to open automatically when UAT supply to Bus 'E' breaker 122 was closed. This resulted in Bus 'E' being supplied by both transformers. Maintenance and Technical Support personnel were contacted and research efforts to determine possible causes and appropriate corrective action were commenced. A concern was identified associated with circulating currents through both transformers due to the parallel operation, which could result in transformer failure. This concern provided a sense of urgency to take prompt action to open one of the breakers and eliminate the parallel supply line-up. Operators observed normal stable currents through both transformers as indicated on the main control board, and discussed which breaker they would open in the event of rapidly increasing transformer currents. It was concluded that the UAT supply breaker 122 would be opened if this were to occur. This was based on the assumption that the circuitry may not recognize that breaker 122 is actually closed. The control room staff's main focus of concern was the possibility of losing power to Aux Bus "E", which would result in a loss of Emergency Bus "B-SB".

Following research and troubleshooting efforts by Operations, Maintenance, and Technical Support personnel, a conclusion was reached that breaker 121 should be manually opened. This was recommended to the control room staff and at 1732 breaker 121 was locally opened. Emergency Bus "B-SB" supply breaker 125 immediately tripped open on interlock, deenergizing the bus and resulting in an automatic start and loading of the B-SB Emergency Diesel Generator.

The Auxiliary Feedwater System turbine-driven and "B" motor-driven pumps then automatically started as required, and were subsequently secured to stabilize steam generator levels. In addition, a Containment Ventilation Isolation Signal occurred during the transient due to failure of a power supply fuse for Containment Leak Detection Radiation Monitor, RM-3502A. The fuse was replaced (per WR&A #93-AFKQ1) and after successful testing, the monitor was restored and the Containment Ventilation System returned to it's normal alignment.

Upon subsequent inspection of breaker 122, Maintenance personnel discovered that the Mechanism Operated Cell (MOC) switch was in the "Breaker OPEN" position. This MOC switch is physically located on the inside wall of the breaker cabinet and during the breaker rack-in process engages with an attachment on the left outside corner of the breaker called an actuating angle.

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Shearon Harris Nuclear Plant Unit #1	05000/400	93	007	01	3 OF 4

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

EVENT DESCRIPTION: (Cont.)
When properly aligned and engaged this switch rotates electrical contacts when the breaker is opened or closed. The MOC switch was in the "Breaker OPEN" position due to these components being misaligned as a result of the last rack-out / rack-in evolution. Therefore, when breaker 121 was locally opened, with the MOC switch in breaker 122 not properly engaged, both breakers erroneously appeared open to the interlock logic and breaker 125 tripped open automatically. Although misalignment was evident, the MOC switch had to be engaged with the breaker, at least up until auxiliary loads were swapped from the UATs to SUTs on May 21, 1993; otherwise, breaker 125 would have received a trip signal earlier. Based on this, the MOC switch most likely slipped off the MOC actuating angle either during the previous auxiliary load swap evolution or two days later during this event when breaker 122 was closed. A scar on the damaged MOC actuating angle indicates that the switch most likely slipped off the angle when breaker 122 was closed on May 23, 1993.

CAUSE:
The cause of this event was the improper alignment of the MOC switch during the rack-in of breaker 122 that occurred on November 20, 1992 and subsequent contact "slip-off" on May 23, 1993. This condition created a false "breaker open" signal and resulted in the automatic trip of breaker 125 on interlock. The following factors contributed to the improper switch alignment; lack of knowledge on the part of operators regarding the proper method for checking MOC alignment during breaker rack-in and inadequate maintenance procedures resulting in improper installation and position verification of the MOC switch and actuating angle.

SAFETY SIGNIFICANCE:
There were no safety consequences as a result of this event. The "B" Emergency Diesel Generator started automatically upon the loss of power to the "B" Safety bus and was available for emergency loads. The "B" Essential Services Chilled Water Circulating Pump (P-4) did not automatically start as designed, but did start upon a manual start signal.

This event is being reported per 10CFR50.72(a)(2)(iv) as an unplanned actuation of an Engineered Safety Feature (ESF). Although similar misalignment problems with 6.9 KV breakers have occurred in the past, none have resulted in a reportable condition. Operator training was conducted following an event that occurred in 1988, but was not incorporated into the initial or continuing training programs to ensure a knowledge of this condition was maintained.

CORRECTIVE ACTIONS:

1. An inspection of other 6.9 KV breakers was performed to ensure proper MOC switch alignment. No other discrepancies were identified.

2. The problem with the Essential Services Chilled Water Circulating Pump (P-4) was corrected by Work Request and Authorization (WR&A) #93-AFKP3, which replaced the supply breaker's closing coil.

3. Training has been provided to operations personnel on proper methods to verify MOC switch alignment during 6.9 KV breaker rack-in evolutions.

4. Initial and Continuing Training programs will be changed to incorporate the training required by corrective action #3.

5. Maintenance procedures will be developed and revised as necessary to include inspection of MOC switch and actuating angle condition and alignment.

6. A placard will be installed inside 6.9 KV breakers to indicate the location for conducting MOC alignment verification.

EIIS INFORMATION:

ESCW P-4 Pump - KM