

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) McGuire Nuclear Station, Unit 1 DOCKET NUMBER (2) 0 5 0 0 0 3 6 9 1 PAGE (3) 1 OF 0 5

TITLE (4) Turbine Driven Auxiliary Feedwater Pump Auto Started Because of a Personnel Error Caused By A Human Factors Deficiency

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	2	8	8	8	8	8	0	0	0	0	0	0
N/A										0	5	0	0	0

OPERATING MODE (9)	1	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §. (Check one or more of the following) (11)																								
POWER LEVEL (10)	1	0	0	0	20.402(b)	20.405(a)(1)(i)	20.405(a)(1)(ii)	20.405(a)(1)(iii)	20.405(a)(1)(iv)	20.405(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)	50.73(a)(2)(viii)(A)	50.73(a)(2)(viii)(B)	50.73(a)(2)(ix)	73.71(b)	73.71(c)	OTHER (Specify in Abstract below and in Text, NRC Form 366A)

LICENSEE CONTACT FOR THIS LER (12)

NAME: Steven E. LeRoy, Licensing TELEPHONE NUMBER: 71014 3171 31-16121313

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)										
CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPDOS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPDOS	

SUPPLEMENTAL REPORT EXPECTED (14) YES (If yes, complete EXPECTED SUBMISSION DATE) NO

EXPECTED SUBMISSION DATE (15) MONTH: DAY: YEAR:

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

On 05/02/88 at approximately 1023, Performance (PRF) personnel were lifting a lead to perform a valve stroke test on Motor Driven Auxiliary Feedwater (CA) Pump 1A Recirculation Valve, 1CA-27A. The lead inadvertently made contact with the electrical circuitry of the Turbine Driven (T/D) CA Pump which then automatically started. After approximately 25 seconds of operation, the T/D CA Pump tripped for an unknown reason. Operations (OPS) attempted to reset the T/D CA Pump without success and at 1030, declared the T/D CA Pump inoperable. At 1045, OPS initiated an emergency work request to have Instrumentation and Electrical (IAE) troubleshoot the electrical circuitry of the T/D CA Pump. IAE found and replaced a blown fuse in the electrical circuitry of the T/D CA Pump. OPS declared the T/D CA Pump operable at 1238. This event is assigned a Cause of Personnel Error because proper execution of the test step failed during the lifting of the lead due to a human factors deficiency. PRF will review this event report and begin using fuse pullers on all lifted leads. Design Engineering will evaluate the use of sliding links for CA Pump recirculation valves. IAE will replace the insulator between terminal B-15 and B-16.

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

INTRODUCTION:

On May 2, 1988 at approximately 1023, while Performance (PRF) personnel were lifting a lead to perform a valve stroke timing test on Motor [EIIS:MO] Driven (M/D) Auxiliary Feedwater (CA) Pump [EIIS:P] 1A Recirculation Valve [EIIS:ISV], 1CA-27A, the lead inadvertently made contact with the electrical circuitry of the Turbine [EIIS:TRB] Driven (T/D) CA [EIIS:BA] Pump and the pump automatically started. After approximately 25 seconds of operation, the T/D CA Pump tripped for an unknown reason. Operations (OPS) Control Room personnel attempted to reset the T/D CA Pump control circuitry without success and at 1030, declared the T/D CA Pump inoperable. At 1045, OPS Control Room personnel initiated an emergency priority work request to have Instrumentation and Electrical (IAE) personnel troubleshoot the electrical circuitry of the T/D CA Pump.

At 1130, OPS Control Room personnel implemented the Nuclear Regulatory Commission (NRC) Immediate Notification Requirements procedure, RP/0/A/5700/10, because of the actuation of an Engineered Safety Feature.

IAE personnel found and replaced a blown fuse [EIIS:FU] in the electrical circuitry of the T/D CA Pump. OPS Control Room personnel declared the T/D CA Pump operable at 1238.

Unit 1 was in Mode 1, Power Operation, at 100% power at the time of this event.

This event has been assigned a Cause of Personnel Error because lifting the lead was a part of the valve stroke timing test; however, proper execution of the test step failed because a human factors deficiency existed.

EVALUATION:

Background

The CA system is provided as a backup for the Main Feedwater system [EIIS:SJ]. It is designed as a means to remove heat from the Reactor Coolant system [EIIS:AB] when normal systems are not available. The CA system contains two motor driven pumps, one turbine driven pump and their associated piping, valves and controls. The T/D CA Pump is capable of supplying feedwater to all four steam generators [EIIS:SG].

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

Description of Event

During the morning of May 2, 1988, PRF Technician A was involved in a valve stroke timing test of valve 1CA-27A in the CA Pump 1A Auxiliary Panel [EIIS:PL]. As PRF Technician A was lifting the lead from terminal B-15, which deenergizes the solenoid [EIIS:SOL] valve for valve 1CA-27A, the lead began sparking because of the close contact between the lead and the terminal post of B-15. As PRF Technician A freed the lead from terminal B-15, the lead inadvertently touched terminal B-16, which is related to the electrical circuitry of the T/D CA Pump. At 1023:15, the T/D CA Pump automatically started. After 25 seconds of operation, the T/D CA Pump tripped. OPS Control Room personnel tried to reset the pump control circuitry without success. OPS Control Room personnel informed PRF personnel that the T/D CA Pump had started and tripped and that PRF personnel should secure their testing.

At 1030, OPS Control Room personnel declared the T/D CA pump inoperable. M/D CA Pump 1A had already been declared inoperable to perform the CA Valve Stroke Timing Quarterly 1A Motor Driven Pump Flowpath procedure as well as other CA Train 1A work. OPS personnel entered Unit 1 into the action statements of Technical Specification 3.7.1.2.

OPS Control Room personnel initiated an emergency priority work request (WR) at 1045 to have IAE personnel troubleshoot the electrical circuitry of the T/D CA Pump.

At 1130, OPS Control Room personnel implemented the NRC Immediate Notification Requirements procedure because of actuation of an Engineered Safety Feature (ESF) [EIIS:JE].

At 1215, IAE personnel found and replaced a blown fuse in the electrical control circuitry of the T/D CA Pump. At 1236, OPS Control Room personnel declared M/D CA Pump 1A operable, and at 1238, the T/D CA Pump was tested and declared operable, and Unit 1 exited the action statements of TS 3.7.1.2.

Conclusion

This event has been assigned a Cause of Personnel Error because although removing the lead from terminal B-15 was a part of the CA Valve Stroke Timing procedure, proper execution of the procedure step failed because a human factors deficiency existed. Terminals B-15 and B-16 are located in the CA Pump 1A Auxiliary Panel. There is an electrical insulator plate that segregates terminal B-15 from terminal B-16, but the insulator plate was badly chipped. When PRF Technician A was removing the lead from terminal B-15, the lead began sparking and as the lead was freed from terminal B-15, the lead inadvertently touched terminal B-16. An undamaged insulator plate could have prevented this contact. The contact between terminals B-15 and B-16 caused a fuse to blow in the control circuitry of the T/D CA Pump. The blown fuse caused power to be removed from the control valves for the T/D CA Pump Stop Valves, 1SA-48 and 1SA-49 [EIIS:ISV], which failed open and supplied steam to the T/D CA Pump thus starting the pump.

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

After approximately 25 seconds of operation, the T/D CA Pump tripped for some unknown reason. After IAE personnel found and replaced the blown fuse in the control circuitry, two subsequent starts of the T/D CA Pump by OPS personnel to ensure the stop valve properly reset and verify operability could not ascertain the reason why the pump tripped. The fuse that was replaced was 10 amp 500V FNQ. The T/D CA Pump stop valves are locally observed on a daily basis by OPS personnel to determine if the valves are open and latched. OPS personnel believe the pump tripped because the mechanical overspeed linkage released.

On April 28, 1988, a Problem Investigation Report was initiated to investigate the ability of the overspeed trip mechanism of the T/D CA Pump to perform its intended function in case of turbine overspeed. As a result of this investigation, a determination was made that the T/D CA Pump was not degraded and that the pump would perform its intended function.

On May 9, 1988, PRF personnel performed the monthly CA Pump No. 1 Performance Test procedure to verify the operational readiness of the T/D CA Pump. The test results indicated all inservice test parameters were within an acceptable range and all acceptance criteria were met. The T/D CA Pump was manufactured by Bingham-Williamette and the overspeed trip mechanism was manufactured by the (Dresser-Rand) Terry Corporation.

There is a semi-annual Motor Control Center and Panel Board Preventive Maintenance (PM) procedure for the CA Pump 1A Auxiliary Panel, which was last performed April 8, 1988. There were no discrepancies noted, and it could not be determined as to when the insulator plate was chipped. The next PM is scheduled for October 9, 1988. PRF personnel initiated a WR to replace the insulator plate between terminals B-15 and B-16 in the CA Pump 1A Auxiliary Panel.

This event involved the first time PRF Technician A had performed a valve stroke timing test on valve 1CA-27A because the valve had been recently added to the list of valves requiring a valve stroke timing test, but PRF Technician A had been involved in other valve stroke timing tests. The PRF technicians involved in the CA Valve Stroke Timing Quarterly 1A Motor Driven Pump Flow path procedure were qualified pursuant to the McGuire Employee Training and Qualification System.

A review of McGuire Licensee Event Reports (LER) revealed numerous ESF actuations caused by Personnel Error; however, no previous events were specifically due to a proper action being chosen but proper execution failing because a human factors deficiency existed. Therefore, this event is not considered to be recurring.

This event is not reportable to the Nuclear Plant Reliability Data System (NPRDS).

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

CORRECTIVE ACTIONS:

- Immediate: PRF personnel secured testing of valve 1CA-27A.
- Subsequent: IAE personnel replaced the blown fuse in the electrical control circuitry of the T/D CA Pump.
- Planned:
 - 1) PRF has initiated WR 88218 to have the insulator between terminals B-15 and B-16 in the CA Pump 1A Auxiliary Panel replaced.
 - 2) PRF Management personnel will review this event with PRF personnel and as an added precaution will require PRF personnel to use fuse pullers on all lifted leads.
 - 3) McGuire PRF will initiate a request for Duke Design Engineering to evaluate the use of sliding links on all CA Pump Recirculation valves.

SAFETY ANALYSIS:

M/D CA Pump 1A and the T/D CA Pump were both inoperable for approximately two hours. During this time, M/D CA Pump 1B was operable and capable of supplying water to two steam generators. The Final Safety Analysis Report Subsection 10.4.7.2.2 states water must be supplied to a minimum of two steam generators to maintain safe shutdown conditions.

The Main Feedwater (CF) system was also operable during this time period and was capable of providing adequate feedwater flow at the required pressure and temperature to the steam generators.

During the two hour time period, no incident occurred which would have challenged the CF system and required the CA system to supply feedwater flow to the steam generators.

There were no radioactive material releases, radiation overexposures, or personnel injuries as a result of this event.

This event is considered to be of no significance with respect to the health and safety of the public.

DUKE POWER COMPANY

P.O. BOX 33189
CHARLOTTE, N.C. 28242

HAL B. TUCKER
VICE PRESIDENT
NUCLEAR PRODUCTION

TELEPHONE
(704) 373-4531

June 1, 1988

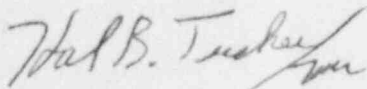
U.S. Nuclear Regulatory Commission
Document Control Desk
Washington, D.C. 20555

Subject: McGuire Nuclear Station, Unit 1
Docket No. 50-369
Licensee Event Report 369/88-08

Gentlemen:

Pursuant to 10CFR 50.73 Sections (a)(1) and (d), attached is Licensee Event Report 369/88-08 concerning an Engineered Safeguard Feature actuation on May 2, 1988. This report is being submitted in accordance with 10CFR 50.73(a)(2)(iv). This event is considered to be of no significance with respect to the health and safety of the public.

Very truly yours,



Hal B. Tucker

SEL/280/bhp

Attachment

xc: Dr. J. Nelson Grace
Regional Administrator, Region II
U.S. Nuclear Regulatory Commission
101 Marietta St., NW, Suite 2900
Atlanta, GA 30323

INPO Records Center
Suite 1500
1100 Circle 75 Parkway
Atlanta, GA 30339

M&M Nuclear Consultants
1221 Avenue of the Americas
New York, NY 10020

American Nuclear Insurers
c/o Dottie Sherman, ANI Library
The Exchange, Suite 245
270 Farmington Avenue
Farmington, CT 06032

Mr. Darl Hood
U.S. Nuclear Regulatory Commission
Office of Nuclear Reactor Regulation
Washington, D.C. 20555

Mr. W.T. Orders
NRC Resident Inspector
McGuire Nuclear Station

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