

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) McGuire Nuclear Station, Unit 1 DOCKET NUMBER (2) 0 5 0 0 0 3 6 9 1 OF 0 4 PAGE (3)

TITLE (4) Non-Safety Related Components Found To Be Installed Between Safety Related Solenoids And Valve Operators On YC And RN Valves Because Of Material 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		
03	10	89	89	007	000	05	10	89	Unit 2		
									DOCKET NUMBER(S)		
									0 5 0 0 0 3 7 0		
									0 5 0 0 0		

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 8: (Check one or more of the following) (11)

OPERATING MODE (9)	1	20.402(b)		20.406(a)		80.73(a)(2)(iv)		73.71(b)
POWER LEVEL (10)	11010	20.406(a)(1)(i)		80.38(a)(1)	X	80.73(a)(2)(v)		73.71(c)
		20.406(a)(1)(ii)		80.38(a)(2)		80.73(a)(2)(vi)		OTHER (Specify in Abstract below and in Text, NRC Form 366A)
		20.406(a)(7)(iii)		80.73(a)(2)(i)	X	80.73(a)(2)(viii)(A)		
		20.406(a)(1)(iv)		80.73(a)(2)(ii)		80.73(a)(2)(viii)(B)		
		20.406(a)(1)(v)		80.73(a)(2)(iii)		80.73(a)(2)(ix)		

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER
A.R. Sipe, Chairman, McGuire Safety Review Group	7 0 4 8 7 5 - 4 1 8 3

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)

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 August 8, 1988, the NRC issued Generic Letter 88-14 on the subject of instrument air supply problems affecting safety related equipment. In response to the purpose of this generic letter, Design Engineering (DE) personnel performed a review of the instrument air supplies associated with all components which serve a safety related function. On March 10, 1989, DE personnel discovered valves in the Chilled Water (YC) system and the Nuclear Service Water (RN) system associated with the Control Room Area Chillers to have non-safety related components installed between the safety related air supply solenoids and the safety related valve actuators. DE personnel are in the process of formulating a final resolution to the design and inservice test problems as identified. Operations (OPS) personnel have taken compensatory measures in the interim by modifying procedure RP/0/A/5700/07, Earthquake, to require inspection of these valves within 30 minutes of a seismic event. This incident is assigned a Design, Construction/Installation Deficiency, because DE personnel approved unqualified material for installation during initial construction of Units 1 and 2. Both Units 1 and 2 have been in all Modes prior to the time in which the event discoveries were made.

8905240180 890510  
PDR ADDCK 05000369  
S PNU

IE22  
111

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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

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

EVALUATION:

Background

The Control Area Ventilation (VC) system [EIIS:VI] and the Chilled Water (YC) system [EIIS:KM] combine to form one system whose purpose is to provide the normal and emergency ventilation requirements to the Control Room [EIIS:NA], the Cable Rooms, the Battery Rooms, the Switchgear Rooms, and the Electrical Penetration Rooms. The Nuclear Service Water (RN) system [EIIS:BI] provides cooling water for the chiller [EIIS:CHU] condensers [EIIS:COND] associated with the VC/YC system. The flow control valves [EIIS:FCV] involved in this event are Fisher air operated throttle valves model number 52A8555, designed to fail in the open, or non-bypass, position. In the event of a Safety Injection or Blackout signal this would guarantee YC system and RN system flow to the VC/YC ventilation units thereby enabling them to provide uninterrupted safe occupancy of their respective areas, and prevent equipment damage because of overheating. Instrument detail drawings were prepared for these valves and their respective controls by MCC Powers Company and were approved by Design Engineering (DE) personnel. Bahnsen Company and Station personnel installed these instruments and controls.

Description of Event

On August 8, 1988, the NRC issued Generic Letter 88-14, Instrument Air Supply Problems Affecting Safety-Related Equipment. In response to this generic letter on August 23, 1988, DE personnel began a review of the Instrument Air system [EIIS:LD] supplies to all components which serve a safety function. In the course of this review DE personnel discovered that safety related valves associated with the VC/YC ventilation units in the YC and RN systems had non-safety related devices installed between the safety related air supply solenoids [EIIS:SOL] and valve operators. In this configuration, the non-safety devices may interfere with the air supply to the solenoid and thereby prevent the solenoid from failing the valve to the full open position during an emergency situation as required. As a result of these findings, DE personnel initiated a Problem Investigation Report on March 10, 1989, to determine and document the operability of these valves as well as initiate action to resolve the problem.

On April 6, 1989, Operations (OPS) personnel took compensatory measures to ensure operability of these valves. These changes were verbal instructions to on-shift OPS personnel followed by a change to procedure RP/O/A/5700/07, Earthquake, which requires that in the event of an earthquake the valves shall be inspected to ensure that valve positioners are functioning properly and that the valves are controlling the process. This inspection must be completed within 30 minutes of the event. If the valve is not controlling the process properly, then the air is to be bled-off of the valve diaphragm. This will fail the valve to the safe position.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME (1)  McGuire Nuclear Station, Unit 1	DOCKET NUMBER (2)  0500036989	LER NUMBER (6)			PAGE (3)	
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER		
		89	007	00	03	OF 04

TEXT: If more space is required, use additional NRC Form 388A (17)

On April 10, 1989, Performance (PRF) personnel initiated Work Request 88804 to test the YC valves in question and consequently document that the valves would indeed fail in the required manner. The RN system valves are already checked on a routine basis by flow balance tests using procedure PT/1/A/4403/07, RN Train 1A Flow Balance Test, and PT/1/A/4403/08, RN Train 1B Flow Balance Test, for Unit 1, and PT/2/A/4403/07, RN Train 2A Flow Balance Test, and PT/2/A/4403/08, RN Train 2B Flow Balance Test, for Unit 2.

Conclusion

This incident is assigned a Design, Construction/Installation Deficiency, because non-safety related components which were not seismically qualified were used during initial construction of Units 1 and 2 as directed by Design Drawings. These drawings were prepared by MCC Powers Company and approved by DE personnel. The functional mechanical design of the air supply system to the valves is deficient because of improper design selection. The potential exists for the non-safety related components to prevent the safety related solenoid from ensuring that the valve can fail to the full open position when required following a seismic event. With the safety related solenoid in direct control of the air supply to the valve actuator the air supply would fail as required and the valve would go to the full open or safe position. As a result of this event, OPS personnel took compensatory actions by changing procedure RP/0/A/5700/07, Earthquake, to ensure that either the valves control the process properly after such an event or that the valves are failed to the safe position. Also, PRF personnel have initiated a work request to document that the YC valves will fail in the safe position and verified that the RN valves had been tested and were operable. DE personnel are continuing to work on a final resolution to this problem.

A review of McGuire LERs for the past 12 months did not reveal any LERs with a root cause or contributing cause of deficient material selection. Therefore, the event is considered not recurring. However, LER 369/89-06 documented a misplaced solenoid arrangement on valve 1NV-459, Main Letdown Orifice Outlet Containment Isolation, because of a construction installation deficiency and LER 369/88-28 documented misplaced solenoid valves on the SM Isolation bypass valves because of incorrect instrument detail drawings. DE personnel have conducted a study of all three nuclear stations to determine if any further problems exist concerning air supplies to safety related components. DE personnel are reasonably assured that this problem does not exist at this time in other systems but, because of the other events which have been noted, the problem of non-safety components installed between the solenoid and valve operator is considered to be recurring.

This incident is not Nuclear Plant Reliability Data System (NPRDS) reportable.

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

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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

TEXT (if more space is required, use additional NRC Form 305a's (1/77))

CORRECTIVE ACTIONS:

- Immediate:
- 1) OPS personnel gave verbal instructions to OPS personnel on duty at that time to perform a verification of these valves operability within 30 minutes after a seismic event.
  - 2) Procedure RP/O/A/5700/07, Earthquake, was changed to require verification of these valves within 30 minutes after a seismic event.
  - 3) DE personnel performed an operability evaluation on these valves and based on the above OPS actions issued a statement declaring that the valves were operable.

Subsequent: None

- Planned:
- 1) DE personnel will complete a study of these valves and formulate plans for a final resolution to this problem.

SAFETY ANALYSIS:

The YC system and RN system throttle valves associated with the Control Room Area ventilation units are required to open on the loss of air supply. This assures that adequate YC and RN flow are maintained to the ventilation units. Since two trains of ventilation are maintained, loss of one of these valves would at worst case cause loss of one train. However, in the event of an earthquake, OPS personnel would be able to identify loss of flow to either air handling unit. The system can be aligned to one of several modes of operation from the Control Room and OPS personnel would be able to place the backup train in service or take actions necessary to open these valves within a 30 minute time period. If Control Room temperatures increase to high levels, OPS personnel would also implement procedure AP/O/A/5500/39, Control Room High Temperature, to help mitigate the consequences of any high temperature condition until the VC/YC system can be restored. The McGuire Final Safety Analysis Report (FSAR) assumes that if only one air handling unit in each area and one chilled water system remain operable, the Control Area ambient temperatures will not be raised to a point where habitability or equipment operation is affected. This event is therefore bounded by the accident analysis of FSAR Section 7.6.10.

This event did not affect 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

May 10, 1989

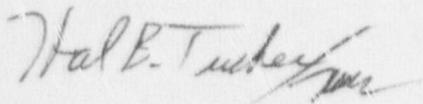
U.S. Nuclear Regulatory Commission  
Document Control Desk  
Washington, D.C. 20555

Subject: McGuire Nuclear Station, Units 1 and 2  
Docket Nos. 50-369 and 50-370  
Licensee Event Report 369/89-07

Gentlemen:

Pursuant to 10CFR 50.73 Sections (a)(1) and (d), attached is Licensee Event Report 369/89-07 concerning non-safety related components found to be installed between safety related solenoids and valve operators on YC and RN valves because of material deficiency in design selection. This report is being submitted in accordance with 10CFR 50.73 (a)(2)(i)(B) and (a)(2)(v). 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/408/sel

Attachment

xc: Mr. S.D. Ebnetter  
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. P.K. Van Doorn  
NRC Resident Inspector  
McGuire Nuclear Station

JE22  
1/1