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DUKE POWER

March 19, 1993

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

Subject: McGuire Nuclear Station Units 1 and 2
Docket No. 50-369
Licensee Event Report 369/93-02

Gentlemen:

Pursuant to 10 CFR 50.73 Sections (a) (1) and (d), attached is Licensee Event Report 369/93-02 concerning Technical Specification required surveillances not being performed completely due to a cause of Deficient Written Communication. This report is being submitted in accordance with 10 CFR 50.73 (a) (2) (i). This event is considered to be of no significance with respect to the health and safety of the public.

Very truly yours,


T.C. McMeekin

TLP/bcb

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

Mr. Tim Reed
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

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PDR ADOCK 05000369
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JE22

bxc: B.L. Walsh
R.C. Futrell (CNS)
P.R. Herran
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M.E. Patrick (ONS)
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G.B. Swindlehurst
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W.M. Sample
D.B. Cook
C. Paton
M.E. Pacetti
NSRB Support Staff (EC 12-A)

LICENSEE EVENT REPORT (LER)

FACILITY NAME(1)

McGuire Nuclear Station, Unit 1

DOCKET NUMBER(2)

05000 369

PAGE(3)

1 OF 6

TITLE(4) Technical Specification Required Surveillances Were Not Performed Correctly Due to Omission Of Relevant Information Because Of Deficient Written Communication

EVENT DATE(5)

LEN 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)
02	17	93	93	02	0	03	19	93	McGuire Unit 2	05000
										05000

OPERATING MODE(9)	1	THIS REPORT IS SUBMITTED PURSUANT TO REQUIREMENTS OF 10CFR (Check one or more of the following)(11)								
POWER LEVEL(10)	100%	20.402(b)		20.405(c)		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)		
		20.405(a)(1)(iii)	X	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

Terry L. Pedersen, Manager, McGuire Safety Review Group

TELEPHONE NUMBER

AREA CODE

704

875-4487

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT(13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRPDS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRPDS

SUPPLEMENTAL REPORT EXPECTED(14)

EXPECTED

MONTH

DAY

YEAR

SUBMISSION

DATE(15)

YES (If yes, complete EXPECTED SUBMISSION DATE)

X

NO

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

On February 16, 1993, McGuire Component Engineering personnel received an Operating Experience (OE) report documenting a problem discovered at South Texas Nuclear Station, Unit 1. The OE report stated that a surveillance review task force had discovered a portion of the Containment Spray (NS) system channels between the process instrumentation and the Engineered Safety Features (ESF) actuation and logic instrumentation that was not being properly tested. Upon examination, the Component Engineering personnel discovered the same problem existed at McGuire. Consequently, McGuire Units 1 and 2 entered Technical Specification 4.0.3 to complete surveillances on the affected equipment. The required testing was satisfactorily completed on February 17, 1993, at 1700. Both Units exited Technical Specification 4.0.3. Units 1 and 2 were in Mode 1 (Power Operation) at 100 percent power at the time the event occurred. This event is assigned a cause of Deficient Written Communication due to relevant information being omitted from the surveillance test procedures. The individuals developing the test procedures did not recognize the significance of the test points used to verify continuity of NS circuitry. The circuits in question were subsequently verified and appropriate procedural changes will be implemented to ensure proper verification of continuity during future surveillance tests.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME(1)	DOCKET NUMBER(2)	LER NUMBER(5)			PAGE(3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
McGuire Nuclear Station, Unit 1	05000 369	93	002	0	2	OF	6

EVALUATION:

Background

The Engineered Safety Features Actuation (ESFA) [EIIIS:JE] system is used to monitor selected plant parameters, determine whether predetermined safety limits are exceeded and, if they are, send signals into logic matrices that look for combinations that would indicate primary or secondary system boundary ruptures. Once the required logic is satisfied, the system sends actuation signals to the Engineered Safety Features (ESF) components whose function best serves the accident.

The ESFA system consists of two discrete portions of circuitry. The first is an analog portion which is made up of instrumentation monitoring various plant parameters such as Reactor Coolant (NC) [EIIIS:AB] system pressure or Containment pressure. Each parameter may be monitored by either three or four redundant channels. The second is the digital portion consisting of two redundant logic trains. Each receives input from the analog protection channels and performs the needed logic functions to actuate the necessary ESF components. Each train is equally and independently capable of actuating the ESF components that may be required. A unique feature of the Containment Spray (NS) [EIIIS:BE] system portion of the digital circuitry is that the bistables and input relays used for the actuation are normally de-energized. This feature helps to prevent an inadvertent actuation of the NS system should a loss of power occur.

The NS system is designed to spray cool water into the Containment atmosphere in the event of a Loss of Coolant Accident (LOCA) and prevent the Containment pressure from exceeding the Containment design pressure of 15 psig. The NS system is actuated either manually from the Control Room [EIIIS:NA] or automatically on a two out of four coincidence high-high Containment Pressure Signal, from the ESFA system (If a Containment Pressure Control system permissive exists).

Description of Event

On September 15, 1992, a surveillance review of adherence to TS requirements at South Texas Nuclear Station, Unit 1 identified a portion of the NS system channels between the process instrumentation and the ESF actuation and logic instrumentation that was not being tested properly. The NS Analog Channel Operation Test requires that the input relay contacts be opened to prevent an inadvertent NS system actuation. Also, during the Solid State Protective System (SSPS) functional test the associated input relay contacts are opened for testing purposes. Upon completion of the required surveillance testing, the input relay contacts are returned to the normal (closed) position. The ESFA system circuitry is normally

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME(1)	DOCKET NUMBER(2)	LER NUMBER(6)			PAGE(3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
McGuire Nuclear Station, Unit 1	05000 369	93	002	0	3	OF	6

de-energized to trip except for the NS system. To prevent spurious actuations the NS system bistables are energized to trip. Because of the normally de-energized condition of the NS system bistables, observation of the Status Monitoring Panel can not be used as an indication of circuit continuity after completion of testing.

Neither the Analog Channel Operational test nor the SSPS Functional test verify the associated relay contacts are closed and there is circuit continuity. Failure of the input relay contacts to close would render one or more channels of the NS system actuation circuitry inoperable. The only way to positively verify that the contacts are closed is to measure continuity across the circuit after the test is complete. The conclusion of the review was that by not verifying continuity after performing the required surveillance tests, the station violated the TS governing ESFA system instrumentation surveillance requirements. This was communicated on the Nuclear Network on October 23, 1992, in Operating Experience (OE) report 5634, Containment Spray Channel Not Being Completely Verified As Required Per Technical Specifications (TS). Duke Power Company Operational Events Analysis personnel received the OE report and began evaluation for applicability to Duke Power Company Nuclear Stations. The evaluation was completed on November 9, 1992. The OE report was then entered into the Duke Power Operating Experience Program (OEP) as applicable to Duke Power Company Nuclear Stations and forwarded to Nuclear Services, Instrumentation And Electrical (IAE) Maintenance personnel to determine whether surveillance tests performed on the Duke Power Nuclear Stations ESFA systems were adequate to test circuit continuity and relay contact positions. The Nuclear Services IAE personnel were then to take appropriate actions to coordinate with appropriate site personnel correction of any procedural deficiencies found to be existing. The evaluation process by Nuclear Services personnel normally takes 90 days. On February 16, 1993, the evaluation by Nuclear Services personnel revealed a potential procedural problem existed. The appropriate Component Engineering personnel at McGuire and Catawba Nuclear Stations were contacted and a copy of OE report 5634 was sent for their evaluation.

On February 17, 1993, the Component Engineering personnel investigated the procedures used for performance of the monthly surveillances on the NS system loops for the protection channels, the SSPS functional tests, and the procedures governing Containment pressure loop calibrations. They discovered the scenario as described in the OE report to be applicable to the manner in which these surveillance tests had been performed at McGuire. No continuity checks had been performed to verify circuit continuity of the NS system circuits after the surveillance tests were performed. Therefore, like South Texas, Unit 1, both units at McGuire were in violation of the TS governing ESFA system surveillance requirements.

As soon as the discrepancy was identified Component Engineering personnel notified appropriate Operations (OPS) personnel. A discussion was held to determine the proper course of action. The conclusion was to perform surveillances as described in the OE report.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME(1)	DOCKET NUMBER(2)	LER NUMBER(5)			PAGE(3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
McGuire Nuclear Station, Unit 1	05000 369	93	002	0	4	OF	6

Subsequently, at 1530, on February 17, 1993, both units entered TS 4.0.3 which gives 24 hours to perform missed surveillances such as these upon discovery. The appropriate procedure changes were initiated, the McGuire IAE personnel involved were given instruction on what was to be performed, and the required testing was completed satisfactorily on February 17, 1993, at 1700. Upon completion both units exited TS 4.0.3.

Conclusion

This event is assigned a cause of Deficient Written Communication due to relevant information concerning performance of continuity checks being omitted from the surveillance test procedures involved. The individuals who developed the test procedures did not recognize the significance of the test points in the NS system circuitry involved and did not include steps to verify continuity of NS system circuitry after testing.

The test points used to verify circuit continuity in this case were added to the McGuire protection cabinets in the latter part of 1978. Personnel involved in the installation and verification of the modification stated that the test points were added as a part of a large modification which contained many wiring changes. To their recollection, no communication about these particular test points or their use was received from Westinghouse. A search of available data revealed no record of any such communication.

Personnel involved in development of the surveillance test procedures stated that they did not recognize any particular significance of the test points, and did not recognize the need to verify circuit continuity after testing when the procedures were developed. Subsequent procedure reviews did not recognize the omission. Because of the omission, no continuity checks have been performed to verify circuit continuity when the surveillances have been performed. Appropriate tests were performed to verify circuitry continuity now exists, and additional procedural enhancements will be made to ensure proper verification of circuit continuity whenever the surveillances are performed.

A review of the OEP Data Base for the 24 months prior to this event revealed no events involving missed TS surveillances due to Deficient Communication or missed surveillances involving the NS system. Therefore, this event is not considered recurring.

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

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

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME(1)	DOCKET NUMBER(2)	LER NUMBER(6)			PAGE(3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
McGuire Nuclear Station, Unit 1	05000 369	93	002	0	5	OF	6

CORRECTIVE ACTIONS:

- Immediate:** 1) Component Engineering personnel evaluated the OE report to determine applicability to McGuire.
- 2) IAE personnel in conjunction with Component Engineering personnel performed tests to determine continuity of the contacts associated with NS system circuitry in question.
- Subsequent:** 1) Component Engineering personnel initiated appropriate procedure changes to include continuity verification in the procedures used to perform surveillances on the NS system circuitry in question.
- Planned:** 1) Component Engineering personnel will ensure that all appropriate procedures are changed to include verification of circuit continuity whenever surveillances are performed on the NS system circuits in question.

SAFETY ANALYSIS:

The NS System, as described in Chapter 6 of the McGuire Nuclear Station Final Safety Analysis Report (FSAR), is designed to maintain the internal pressure in the Containment building at less than 15 pounds per square inch during a large break LOCA. This accident, as described in Chapter 15 of the FSAR, is a transient which releases a large amount of energy into the Containment building. Having the capability of spraying cool water into the Containment building during the LOCA transient, and allowing for long term cooling of the Containment building atmosphere by alignment of NS system pump [E11S:P] suction to the Containment recirculation sump, aids in maintaining the integrity of the Containment building against the release of radioactivity to the environment. This contributes to control of offsite releases at values less than those specified in 10 CFR 100.

The event described in this LER is technical in nature in that it deals with the failure to perform a portion of a surveillance requirement. The TS surveillance requires that the actuation circuitry be tested to prove their operability every month. This test, to prove operability, was performed along with Engineered Safety Features testing which is performed on a quarterly basis and Time Response testing on an 18 month cycle. All of these tests overlap on the portions of the circuitry that are tested. Since the testing performed upon discovery of the problem found no inoperable relays, and since the equipment history of this circuitry shows no failed relays, this circuit is not considered to have been past

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME(1)-	DOCKET NUMBER(2)		LER NUMBER(5)			PAGE(3)		
			YEAR	SEQUENTIAL NUMBER	REVISION NUMBER		OF	
McGuire Nuclear Station, Unit 1	05000	369	93	002	0	6		6

inoperable. The failure to test the return of the relays to their normal state does indicate that some of the surveillance testing was inadequate; however, there is no question that the circuitry would have actuated as required during an accident. To render the entire NS system inoperable, multiple failures of contacts would have to occur. During the time from when the modification was installed, until the inadequate surveillance was discovered, there were no conditions or combinations of conditions that would have required the NS system to actuate. There were also no conditions or combination of conditions which would have been aided by the use of the NS system. Therefore, the health and safety of the public were not affected as a result of this event.

ENCLOSURE 1

Prepared by: Gary T. Small Date: March 17, 1993

Tom A. Arlow

Reviewed by: Gary T. Small Date: March 17, 1993
Beverly Barrett Date: March 17, 1993
J. M. McL Date: March 17, 1993
James C. Allgood Date: March 17, 1993
Karl Harkin Date: March 17, 1993
Date: _____

Approved by: Bayle R. Fleener for TLPedersen Date: March 17, 1993
Manager, MSRG

List Of Enclosures

<u>Enclosure No.</u>	<u>Title</u>
1	McGuire Safety Review Group Signatures
2	References
3	Corrective Action Schedule
4	Personnel Contacted
5	Cause Code Assignment Sheet

ENCLOSURE 2

REFERENCES

1. Technical Specification 4.3.2.1, Engineered Safety Features Actuation System Instrumentation
2. PIP O-M93-0172
3. Operating Experience Report No. 5634
4. Senior Reactor Operator's Logbook For Unit 1 and 2 on February 17, 1993
5. Work Orders 93014077 and 93014080
6. FSAR Chapter 6
7. FSAR Chapter 15

ENCLOSURE 3

CORRECTIVE ACTION SCHEDULE

<u>Corrective Action</u>	<u>Person(s) Contacted</u>	<u>Person(s) Assigned To</u>	<u>Due Date</u>
1	Jeff Freeze	Bruce Travis	05/30/1993

ENCLOSURE 4

PERSONNEL CONTACTED

Jeff Freeze, Component Engineering

Dom Pazzula, Component Engineering

Tim Lyerly, Component Engineering

Steve Carter, Work Control

Doug Simmons, Work Control

DPC/MNS
LER No. 369/93-02

ENCLOSURE 5

CAUSE CODE ASSIGNMENT SHEET

CAUSE CODES: B4c - Deficient Written Communication (Omission Of Relevant Information)