

LICENSEE EVENT REPORT (LER)

FACILITY NAME(1) McGuire Nuclear Station, Unit 1

DOCKET NUMBER(2)

PAGE(3)

05000 369

1 OF 6

TITLE(4) A Failure To Comply With Technical Specification Action Statement Occurred Due To A Technically Deficient Procedure.

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)
05	26	93	93	06	0	06	25	93		05000
										05000

OPERATING MODE(9)	5	THIS REPORT IS SUBMITTED PURSUANT TO REQUIREMENTS OF 10CFR (Check one or more of the following)(11)								
POWER LEVEL(10)	0%	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(e)(2)(v)		73.71(c)		
		20.405(a)(1)(ii)		50.36(c)(2)		50.73(a)(2)(vii)				
		20.405(a)(1)(iii)	X	50.73(a)(2)(i)		50.73(a)(2)(viii)(A)		OTHER (Specify in Abstract below and in Text)		
		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 NFRDS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NFRDS

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 May 26, 1993, Operations and Systems Engineering personnel were performing the Unit 1, Train B, Engineered Safety Features (ESF) actuation test in accordance with procedure PT/1/A/4200/09A, ESF Actuation Periodic Test. While in the re-alignment phase of the test, at approximately 1530, Control Room (CR) personnel discovered that the sample blower for radiation monitor (EMF) 1 EMF-43B was off. 1 EMF-43B monitors the B Train Control Room Ventilation System (VC) air intakes. With the sample blower off, 1 EMF-43B is considered inoperable. Technical Specification (TS) 3.3.3.1 requires a VC air intake to be isolated within one hour if it has an inoperable EMF. Investigation by CR personnel revealed that 1 EMF-43B had been inoperable for approximately 1 hour and 52 minutes, without the VC air intake being isolated. Investigation also revealed that the same EMF had been inoperable for approximately 1 hour and 35 minutes earlier in the day, during a different portion of the ESF test. Investigation further showed that the A Train portion of the test had most likely rendered 1 EMF-43A, which monitors the A Train VC intake, inoperable on May 25, 1993. Failure to isolate the VC air intakes with the EMFs inoperable constitutes a condition prohibited by TSS, and is therefore reportable. Unit 1 was in Mode 5, (Cold Shutdown) at the time of the event. This event was caused by a Technically Deficient procedure. Corrective actions will include revising the Unit 1 and Unit 2 test procedures, to prevent reoccurrence.

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EVALUATION:

Background

The Control Area Ventilation and Air Conditioning (VC) systems [EIIS:VI] are designed to maintain the environment in the Control Room (CR) [EIIS:NA], Control Room Area, and Switchgear Room within acceptable limits for operation of unit controls, for maintenance and testing of the controls as required, and for uninterrupted safe occupancy of the CR during post-accident shutdown. Due to these criteria, the systems are designed as an Engineered Safety Feature (ESF) system [EIIS:JE] with absolute and carbon filtration in the outside air intakes and equipment redundancies for use as conditions require.

The Radiation Monitoring (EMF) system [EIIS:IL] is divided into two functionally separate systems, the process monitoring portion and the area monitoring portion. The process monitoring portion provides several functions. Included in these is the ability to provide early warning to station personnel of equipment, component, or system malfunctions or potential radiological hazards within the station during normal operation consistent with the limits of the station Technical Specifications (TS). An additional function is to provide the radiological monitoring functions for the air intakes of the CR and the onsite Technical Support Center. The specific monitoring function for the CR air intake is provided by EMF 43A and 43B for each air intake, respectively. A high radiation signal on either EMF will alarm [EIIS:RA] in the CR.

The ESF senses selected unit parameters, determines whether or not predetermined safety limits are being exceeded and, if they are, combines the signals into logic matrices sensitive to combinations indicative of primary or secondary system boundary ruptures. Once the required logic combination is completed, the system sends actuation signals to those ESF components whose aggregate function best serves the requirements of the accident. In order to demonstrate the operability of the ESF system, the system is subjected to periodic tests. An integrated system test is performed when the unit is cooled down and the Residual Heat Removal (ND) system [EIIS:BP] is in operation. This test does not introduce flow into the Reactor Coolant (NC) system [EIIS:AB] but does demonstrate the operation of the valves, pump circuit breakers [EIIS:52], and automatic circuitry including Diesel Generator (DG) [EIIS:DG] starting and the automatic loading of ESF components on the diesels (by simultaneously simulating a loss of offsite power to the vital busses).

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Description of Event

On May 26, 1993 at 1022, Operations (Ops) and Systems Engineering (SE) personnel began the active portions of procedure PT/1/A/4200/09A, ESF Actuation Periodic Test. The purpose of this test procedure is to demonstrate the operability of various portions of the ESF circuitry. The entire test requires 5 days of testing divided into several sections. Procedure Section 12.3, B Train - Safety Injection, Phase A, Phase B, and Blackout Followed by Safety Injection, was begun on May 26, 1993. Procedure PT/1/A/4200/09A is performed by simultaneously initiating a manual Safety Injection (Ss) signal, Phase A (St) Containment Isolation signal, Phase B (Sp) Containment Isolation signal, and opening the feeder breaker to 1ATD transformer [E1IS:XFMR] which causes a B Train Blackout (Bo) signal. Procedure PT/1/A/4200/09A then verifies the automatic system alignments and component actuation to demonstrate that the ESF system is performing as expected. Since one of the features of this test is to initiate a loss of power to the essential bus, all components which receive power from this source are de-energized. The system is designed with a sequencer, which will re-apply loads to the essential bus, as required for an Ss signal, once the emergency DG is ready to accept loads. This automatic sequencing of loads only applies to the major components which are supplied power from the essential bus.

When the Bo signal was initiated, one of the components which lost power was the sample blower for 1 EMF-43B, Control Room Air Intake Radiation Monitor. This EMF is used to monitor the B Train air intake of the VC system and to warn CR personnel of any increase in the activity level. This warning would allow the CR personnel to isolate the effected air intake. The EMF itself is not safety related, nor does it receive safety power. The power supply to the EMF is from the battery backed up, non-safety power supply KXB. Since the sample blower for 1 EMF-43B had no power during the test, the EMF was inoperable. Technical Specification 3.3.3.1 requires that with an inoperable EMF in the VC air intake line, to isolate the effected intake line within 1 hour. To complete this portion of the test, and to re-align the effected systems took approximately 1 hour and 25 minutes. The sample blower for 1 EMF-43B was restarted at 1157, on May 26, 1993.

The next test section to be performed was 12.4, B Train, Blackout. The test section demonstrates the capability of the ESF system to respond to a Bo only condition (a signal where an Ss is not generated.) This section is performed by opening circuit breaker 1TD-4, which is the feeder breaker to the 6900v/4160v transformer 1ATD, which causes a loss of essential power on the B Train. This power loss again caused the sample blower for 1 EMF-43B to stop, making 1 EMF-43B inoperable. Procedure Section 12.4 was completed to the realignment steps in approximately 1 hour and 52 minutes. The sample blower to 1 EMF-43B was restarted at 1329, on May 26, 1993.

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Control Room personnel, when realigning the systems effected by section 12.4, realized that the TS requirements for 1 EMF-43B had not been met, and immediately restarted the sample blower. However, the failure to isolate the VC air intakes within the TS required time constitutes operation in a condition prohibited by TS and is therefore reportable. Investigation by CR personnel revealed that the action statement of TS 3.3.3.1 had also been missed during the earlier test section.

Procedure PT/1/A/4200/09A is also divided so that both trains of the ESF system are tested. A Train testing was completed on May 25, 1993. The A Train of the VC air intake contains 1 EMF-43A which duplicates the function of 1 EMF-43B, but for the opposite train. The equivalent sample flow alarm [EIIS:FA], which provided information about the status of 1 EMF-43B, was not functioning during the A Train testing. Without this alarm capability, no direct evidence exists as to whether TS 3.3.3.1 was violated. However, objective evidence, based upon the loss of flow indications of related A Train EMFs indicate that the action statement of TS 3.3.3.1 was violated on May 25, 1993, during the A Train test.

**Conclusion**

The cause of this event is a Technically Deficient Procedure. Procedure PT/1/A/4200/09A is deficient in several respects. Procedure PT/1/A/4200/09A does not specifically reference the TS's which are involved in the test. There is a list of TSs contained under step 6.13 which states, "Operations (OPS) shall review the following... log in the Tech. Spec. log book as applicable." However, this list does not contain TS... The list under step 6.13 does contain references to TSs 3.11.1.3, 3.11.2.4, and 3.3.3.9 all of which were moved to chapter 16 of the Final Safety Analysis Report in May, 1991. There are no procedural steps which specifically address restarting of the 1 EMF-43 sample blowers. Procedure sections 12.1 and 12.3, for the Ss, St, Sp and Bo, (A Train and B Train, respectively) contain steps 12.1.80 and 12.3.80 which read "Have OPS restart EMF sample blowers after 1MISV5581 and 1MISV5583 are re-opened." The valves referred to in procedure steps 12.1.80 and 12.3.80, are the Containment Isolation valves which isolate the flowpath of the EMFs which are sampling the containment atmosphere. These steps are poorly worded, and imply starting only the sample blower that supplies sample flow to the EMFs which sample the containment atmosphere. In the restoration portions of section 12.2 and 12.4, which are the Bo only portions of the test (A Train and B Train, respectively) there are no steps which would direct any EMF sample blowers to be re-started. Lastly, the procedure is deficient in that it takes longer than the TS allowed time to reach the point of restoration. The CR personnel restarted the EMF sample blowers at their earliest opportunity, based upon the testing activity. However, the CR personnel were able to restart the sample blower within the TS allowed time in 1 case of the 4 that were performed.

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While discussing this event with Ops procedure personnel, it appeared that under certain scenarios of loss of power events, the operability of 1 EMF-43A(B) could be in question. The operability of 1 EMF-43A(B), and all other TS required EMFs, during loss of power events, will be evaluated by Ops procedure writers.

A search of the Operating Experience Program data base for the preceding 24 months revealed another report, LER 370/92-02, which deals with an ESF actuation while performing procedure PT/2/A/4200/09A, ESF Actuation Periodic Test, due to a technically deficient procedure. Therefore, this event is considered to be recurring. The corrective actions of LER 370/92-02 were specific to that technical deficiency, and would not have prevented this event.

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

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

**CORRECTIVE ACTIONS:**

Immediate: 1) Ops personnel restarted 1 EMF-43B sample blower.

Subsequent: 1) None.

Planned: 1) SE personnel will add a step to procedure PT/1/A/4200/09A to isolate the the VC air intake of the train being tested prior to the test being performed.

2) SE personnel will add a step to procedure PT/2/A/4200/09A, to isolate the VC air intake of the Train being tested, prior to the test being performed.

3) SE personnel will perform a comprehensive review of the components which are actuated by procedure PT/1/A/4200/09A, and compare this information against the TS to find and correct any other technical deficiencies.

4) SE personnel will perform a comprehensive review of the components which are actuated by procedure PT/2/A/4200/09A, and compare this information against the TS to find and correct any other technical deficiencies.

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- 5) Ops personnel will evaluate the need to rearrange the steps in procedures AP/1 & 2/A/5500/07, Loss Of Electrical Power, to ensure the EMF sample blowers are restarted under all possible scenarios.
  
- 6) Ops personnel will evaluate the need to add steps to the plant Emergency Procedures to ensure that EMF sample blowers are restarted after a loss of power has occurred.

**SAFETY ANALYSIS:**

The requirement to isolate a VC air intake which has an inoperable EMF is based on limiting the CR dose during accident situations. The TS action statement assumes that if a VC air intake were not isolated, when its corresponding EMF is inoperable, the dose to the CR personnel may exceed the General Design Criteria (GDC) 19 limits. The thought is that this may occur due to the CR personnel not taking any action to isolate the air intake if its activity levels were to increase, since the inoperable EMF would provide no warning to the CR personnel. PIR 0-M91-0060 was written to address concerns with the VC air intakes. The specific purpose of this PIR is to consider the effect of having the VC air intakes open during accident scenarios. Calculation MCC-1227.00-00-50, which was performed in response PIR 0-M91-0060, states that the dose of CR personnel would not exceed the GDC-19 limits with the intake left open, therefore, this event is not considered to be significant. The health and safety of the public were not effected by this event.