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DUKE POWER

July 3, 1990

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

Subject: McGuire Nuclear Station Unit 1 and 2
Docket No. 50-369
Licensee Event Report 369/90-14

Gentlemen:

Pursuant to 10 CFR 50.73 Sections (a)(1) and (d), attached is Licensee Event Report 369/90-14 concerning both trains of the Control Room Ventilation System inoperable because of certain intake valves being closed. This report is being submitted in accordance with 10 CFR 50.73(a)(2)(v) and (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,

Tony L. McConnell

T.L. McConnell

DVE/ADJ/cbl

Attachment

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Mr. P.K. Van Doorn
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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 7																						
TITLE (4) Both Trains Of The Control Room Ventilation System Were Inoperable Because Of A Procedure Deficiency																																
EVENT DATE (5)						LER NUMBER (3)				REPORT DATE (7)						OTHER FACILITIES INVOLVED (8)																
MONTH			DAY			YEAR			YEAR		SEQUENTIAL NUMBER		REVISION NUMBER		MONTH			DAY			YEAR			FACILITY NAMES McGuire Unit 2				DOCKET NUMBER(S) 0 5 0 0 0 3 7 0				
0 6			0 3			9 0			9 0			0 1 4		0 0		0 7			0 3			9 0							0 5 0 0 0			
OPERATING MODE (9)		THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 8. (Check one or more of the following) (11)																														
1																																
POWER LEVEL (10)		20.602(b)																														
1 0 0		20.608(a)(1)(i)																														
		20.608(a)(1)(ii)																														
		20.608(a)(1)(iii)																														
		20.608(a)(1)(iv)																														
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		80.73(a)(2)(iv)																														
		80.73(a)(2)(v)																														
		80.73(a)(2)(vi)																														
		80.73(a)(2)(viii)(A)																														
		80.73(a)(2)(viii)(B)																														
		80.73(a)(2)(ix)																														
LICENSEE CONTACT FOR THIS LER (12)																																
NAME Alan Sipe, Chairman, McGuire Safety Review Group										TELEPHONE NUMBER 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 NRC		CAUSE		SYSTEM		COMPONENT		MANUFACTURER		REPORTABLE TO NRC														
SUPPLEMENTAL REPORT EXPECTED (14)																																
YES (If yes, complete EXPECTED SUBMISSION DATE)										NO																						
										X																						
EXPECTED SUBMISSION DATE (15)										MONTH DAY YEAR																						

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

On May 25, 1990 between 1505 and 1715, Instrumentation and Electrical (IAE) personnel performed procedure IP/O/B/3006/09, Radiation Monitoring System RP-30A Loop Calibration, on 1EMF-43A, Control Room Air Radiation Monitor for Train A. On June 3, 1990, between 2041 and 2217, IAE personnel performed the same Radiation Monitoring System Loop Calibration procedure on 1EMF-43B, Control Room Air Radiation Monitor for Train B. After testing the control action for 1EMF-43B which closes the Control Room Ventilation (VC) valves VC-9 through 12, Unit 2 Outside Air Intake Isolation Valves, Operations personnel discovered that valves VC-1 through 4, Unit 1 Outside Air Intake Isolation Valves, were also closed. Prior to the Radiation Monitoring System Loop Calibration procedure being performed on 1EMF-43A, valves VC-1 through 4 and VC-9 through 12 were verified to be open. Therefore, it is believed that after performance of the Radiation Monitoring System Loop Calibration procedure for 1EMF-43A valves VC-1 through 4 were not reopened. Unit 1 and Unit 2 were in Mode 1 (Power Operation) at the time of this event. Unit 1 varied in power level during the time that valves VC-1 through 4 were closed. Unit 2 was at 100 percent power during that time. This event is assigned a cause of Procedure Deficiency. Maintenance Engineering Services (MES) personnel wrote a procedure change to the Radiation Monitoring System RP-30A Loop Calibration Procedure for Operations personnel to evaluate control actions and restore components to the desired configuration(s).

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED OMB NO. 3150-0104

EXPIRES: 8/31/90

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

EVALUATION:

Background

There are two independent trains of the VC [EIIS:VI] System which are designed to maintain a habitable environment in the Control Room [EIIS:NA], Control Room Area, and Switchgear [EIIS:SWGR] Rooms during normal and accident conditions. Based on these criteria, the system is designed as an Engineered Safety Features [EIIS:JE] system with absolute and carbon filtration [EIIS:FLT] in the outside air intakes and with equipment redundancies for use as conditions require. The Control Room is designed to be maintained at a positive pressure of ≥ 0.125 inches water gauge (w.g.), relative to outside atmosphere during an accident to prevent entry of contaminants. Two 100 percent capacity Outside Air Pressure Filter Trains pressurize the Control Room by providing approximately 1000 cubic feet per minute (cfm) of filtered outside air in addition to approximately 1000 cfm of filtered recirculated Control Room air.

The VC system has 2 trains, each with two outside air intake structures [EIIS:NN]. Each structure is monitored by a Radiation Monitor [EIIS:MON] for the presence of radiation and has two redundant isolation valves [EIIS:ISV]. When a radiation signal is received by either Control Room Outside Air Intake Radiation Monitors, 1EMF-43A or 1EMF-43B, the intake, which is the source of contamination, automatically closes. Should both intakes close, the operator will override the intake radiation monitors and by inspection of the Control Room readouts, open all four intakes. This will ensure pressurization of the Control Room at all times.

Technical Specification (TS) 3.3.3.1 states for the VC Outside Air Intake Radiation Monitors, EMF 43A and 43B, a minimum of two operable channels [EIIS:CHA] are required. With the number of operable channels less than the minimum requirement, the VC system outside air intakes, which contain the inoperable instrumentation, must be isolated within one hour.

The Operability Evaluation for PIR 0-M89-0163, Revision 2 dated May 1, 1990, and expiring October 31, 1990, states:

In order to achieve acceptable pressure in the Control Room, the doors [EIIS:DR] in the Control Room were sealed with tape, with the exception of the two doors leading to the Service Building [EIIS:MF], and all four outside air intakes were opened. Based on the test results and the conditions required to achieve the test results, the VC system is Conditionally Operable, with the conditions of operability being:

- Maintain a tight seal [EIIS:SEAL] on all the doors in the Control Room. All of the seams of the Control Room doors (except the two doors leading to the Service Building, which are pressure doors) are to be taped. Tape can subsequently be removed as long as Control Room pressurization requirements are met.

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TEXT (If more space is required, use additional NRC Form 365A's) (17)

- All four outside air intakes are to stay open except during testing and maintenance. The operating procedure for the VC system is to be modified to specify all four intakes to be open during normal and accident conditions. The operator will be required to reopen all intakes if they are closed due to the radiation monitor detecting contaminated air in the duct.

The doors which are required to be sealed with tape to maintain an acceptable pressure in the Control Room have been subsequently sealed with a high quality RTV sealant.

Description of Event

On May 25, 1990, between 1100 and 1130, Performance personnel performed procedure PT/O/A/4450/08C, Control Area Ventilation System Performance Test. This procedure verified that valves VC-1 through 4 and VC-9 through 12 were open at that time. Also, on May 25, 1990, between 1505 and 1715, IAE personnel performed procedure IP/O/B/3006/02, Radiation Monitoring System RP-30A Loop Calibration. This procedure was required per Work Request 07331B which is a monthly preventative maintenance (PM) procedure to perform an Analog Channel Operational Test (ACOT) on Radiation Monitor 1EMF-43A. Part of this test requires verifying the control actions occurred. The control action for 1EMF-43A high radiation alarm trip setpoint is for valves VC-1 through 4 to move to the closed position.

On June 3, 1990, between 2041 and 2217, IAE personnel performed the Radiation Monitoring System Loop Calibration Procedure for 1EMF-43B. After testing the control action of 1EMF-43B where valves VC-9 through 12 close, IAE personnel requested Operations personnel to re-open the valves. Operations personnel then discovered, at this time, that valves VC-1 through 4 were also closed. Operations personnel immediately opened valves VC-1 through 4 and VC-9 through 12. IAE personnel retested the control action for EMF-43B and verified that only valves VC-9 through 12 moved to the closed position. Valves VC-1 through 4 and VC-9 through 12 were verified open at 2220 on June 3, 1990.

On June 4, 1990, at 1745, Operations personnel notified the NRC about this event.

Conclusion

This event has been assigned a cause of Deficient Procedure because procedure IP/O/B/3006/09, Radiation Monitoring System RP-30A Loop Calibration had a step requiring IAE personnel to verify the closing of valves VC-1 through 4, but the procedure did not contain a step requiring the valves to be returned to the normal operating position which is an open position. IAE personnel are required per procedure to verify the control action for 1EMF-43A had occurred, which is to verify the closing of valves 1VC-1A, 1VC-2A, 1VC-3B and 1VC-4B.

This test has successfully been performed frequently in the past without incident. This test is performed as a monthly PM for both EMFs 43A and 43B, so it is performed twice a month. It has been required per procedure since at least 1984 to verify that valves VC-1 through 4 and VC-9 through 12 close during the

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TEXT (If more space is required, use additional NRC Form 306A's) (17)

test. In every case prior to this event, the valves were returned to an open position. This has been performed by relying on the memory of personnel involved and communications between IAE and Operations personnel. Also, this test has been successfully completed without incident twice a month, since the Operability Evaluation was issued for the VC system on August 19, 1989. Operations personnel enhanced procedure PT/1/A/4600/03A, Semi-Daily Surveillance Items, to verify the VC Outside Air Intake Valves are open. Also, Operations personnel will enhance procedure EP/1/A/5000/01, Safety Injection Reactor Trip, to verify the VC Outside Air Intake Valves are open during the verification of the proper alignment of the VC and Chilled Water system (YC) [EIIS:KM]. These enhancements will verify the VC Outside Air Intake Valves are open in accordance with the Operability Evaluation for PIR 0-M89-0163.

During the investigation of this event, it was determined that valves VC-1 through 4 could only have been closed and left in the closed position due to the performance of the ACOT for 1EMF-43A performed on May 25, 1990. No other tests, maintenance, or automatic signals had occurred on Train A of the VC system between May 25 and June 3, 1990, that could have led to the closing of valves VC-1 through 4.

There are no annunciator [EIIS:ANN] alarms [EIIS:ALM] or associated computer [EIIS:CPU] point alarms that could have alerted Operations personnel that the valves were still closed. During a radiation alarm [EIIS:RA] receipt from either 1EMF-43A or 1EMF-43B or an alarm received from the Chlorine Detectors [EIIS:DET], the Outside Air Intake valves will close. There were no alarms or maintenance performed that could have led to a determination that the VC valves closed due to a control action received from the Chlorine Detectors. When radiation monitor 1EMF-43A or 1EMF-43B is in test, Operations personnel are told by IAE personnel that they will receive a control action. Operations personnel did expect to get an EMF radiation alarm and received one. When IAE personnel were completed with the ACOT they took Work Request 07-31B to Operations for Operations personnel to sign and thereby return 1EMF-43A back to operable status. This is based on 1EMF-43A satisfactorily meeting the functional requirements. Since there was not a step in the procedure to ensure the VC valves were returned to an open position, valves VC-1 through 4, due to a communication breakdown or memory lapse, were not returned to the open position. Subsequent to this event, MES personnel have added a step to procedure IP/0/B/3006/09, Radiation Monitoring System RP-30A Loop Calibration, stating that IAE personnel are to notify the Reactor Operator At The Controls (ROATC) to evaluate control actions and restore controlled equipment to the desired configuration and to meet any Independent Verification (IV) requirements if required. Also, MES personnel evaluated other IAE procedures that could affect the position of the Outside Air Intake VC valves and found all other procedures to be acceptable; however, these procedures did not contain any IV requirements on these valve positions. This will be added by MES personnel.

A possible contributing factor to this event is because there is no formal mechanism for Justification For Continued Operation (JCOs) and Operability Evaluations to be reviewed and evaluated for procedural changes with any group other than the operating group. Operations personnel receive the JCOs and

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TEXT (If more space is required, use additional NRC Form 359A's) (17)

Operability Evaluations and make the required procedural changes; however, in some cases, IAE, Maintenance, or Performance procedures may require review for applicability. There is no formal mechanism to have this review take place. Compliance personnel will review the procedure for processing JCOs and Operability Evaluations and enhance as necessary.

An Operating Experience Program (OEP) Data Base search was conducted for the previous 24 months for TS violations or Safety Function Impairments with a root or contributory cause of Deficient Procedure because of incomplete information. This search revealed 5 LERs which documented events involving different equipment and administrative controls. The LERs are 369/88-16, 369/88-40, 369/89-03, 369/89-19, and 370/89-04. The corrective actions were specific to those 5 events. Therefore, this event is not considered recurring.

As a result of other events involving the VC system identified in LER 369/89-15, LER 369/89-26, LER 369/89-28, LER 369/89-30 and LER 369/89-31, the problem with operability of the VC system in general is considered to be 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.

CORRECTIVE ACTIONS:

Immediate: Valves VC-1 through 4 and VC-9 through 12 were reopened upon discovery of valves VC-1 through 4 being in a closed position.

- Subsequent:
- 1) MES personnel revised procedure IP/0/B/3006/09, Radiation Monitoring System RP-30A Loop Calibration, to state that IAE personnel are to notify the ROATC to evaluate control actions, restore controlled equipment to the desired configuration and to meet any IV requirements if required.
 - 2) MES personnel evaluated other IAE procedures that could affect the position of the VC valves and found them to be acceptable in ensuring the valves are returned to the desired configuration.
 - 3) Operations personnel enhanced procedure PT/1/A/4600/03A, Semi-Daily Surveillance Items, to verify the VC Outside Air Intake Valves are open.

- Planned:
- 1) MES personnel will revise IAE procedure IP/0/B/3012/14, VC System Chlorine Detectors, to add IV requirements on valves VC-1 through 4 and VC-9 through 12.
 - 2) Compliance personnel will review the procedure for processing JCOs and Operability Evaluations and enhance it as necessary.

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TEXT (If more space is required, use additional NRC Form 305A's) (17)

- 3) Operations personnel will enhance procedure E²/1/A/5000/01, Safety Injection Reactor Trip, to verify the VC Outside Air Intake Valves are open during the verification of the proper alignment of the VC/YC.

SAFETY ANALYSIS:

The design requirements of the VC system are to supply filtered air at a controlled temperature and humidity to the Control Room and to pressurize the Control Room to prevent inleakage of unfiltered air. The VC system helps ensure that doses to Control Room personnel are As Low As Reasonably Achievable and remain below Code of Federal Regulations, Title 10, Part 50 (10CFR50), Appendix A, Criteria 19 (GDC-19) limits.

The TS 4.7.6 requirement specifies that a Control Room positive pressure of \geq to 0.125 inches water gauge (w.g.) relative to outside atmosphere during system operation must be demonstrated at least once every 18 months. A positive pressure of 0.05 inches w.g. is considered sufficient to prevent inleakage in excess of 10 cfm, which is the assumed leakage value used for radiation dose calculations in Chapter 15 of the Final Safety Analysis Report (FSAR).

The Operability Evaluation results for PIR 0-M89-0163 showed both outside air pressurization filter trains were able to pressurize the Control Room greater than the 0.125 inches w.g. with all four outside air intakes open. With two intakes open, the Control Room pressure was still positive but less than the required 0.125 inches w.g.

The principle contaminant contained in air leaking into the Control Room is assumed to be Iodine which is very conservatively modeled in dose calculations. Very low amounts of Iodine would be expected to reach the area around the Control Room since this requires passage through either Auxiliary or Turbine Building Ventilation systems [E1IS:VF,VK] or passageways first.

Control Room Operator dose would be further reduced by operation of the Auxiliary Building Ventilation system which is not safety related but has been maintained to safety standards. No credit is taken for the Auxiliary Building Ventilation System filters in mitigating the Emergency Core Cooling System leakage source, but this system is automatically switched to the filtered exhaust mode of operation on an accident or Blackout signal or if radiation is detected by the exhaust monitor. The Auxiliary Building Ventilation system has two trains (Unit 1 and Unit 2) both of which respond to an accident on either unit thus providing essentially redundant protection. The operation of the Auxiliary Building Ventilation system is not considered in calculating Control Room doses but operation in the filtered exhaust mode by either train of the system would serve to reduce the calculated dose to Control Room personnel.

In the event the Control Room atmosphere became unbreathable, self contained breathing apparatus respirators provided in the Control Room area could be employed. Radiation monitors in the Control Room would alert Control Room personnel of high radiation levels.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED OMB NO. 3150-0104

EXPIRES: 8/31/88

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

All of the Outside Air Intakes were closed for a short period of time during performance of the ACOT on 1EMF-43B that lasted for a period of less than 1 1/2 hours. Operations personnel immediately opened all the VC system outside air intake valves upon discovery of this fact. For this time period, the VC system was in recirculation mode and no accidents occurred that could have threatened the habitability of the Control Room.

The health and safety of the public were not affected by this event.