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May 1, 1992

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

Subject: McGuire Nuclear Station Unit 2
Docket No. 50-370
Licensee Event Report 370/92-05

Gentlemen:

Pursuant to 10 CFR 50.73 Sections (a) (1) and (d), attached is Licensee Event Report 370/92-05 concerning the inoperability of the Containment Pressure Control system. 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

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Washington, D.C. 20555

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NRC Resident Inspector
McGuire Nuclear Station

IE22

LICENSEE EVENT REPORT (LER)

FACILITY NAME(1)	DOCKET NUMBER(2)	PAGE(3)
McGuire Nuclear Station, Unit 2	05000 370	1 OF 6

TITLE(4): Containment Pressure Control System Was Inoperable Due To An Unknown Cause

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)
										05000
4	1	92	92	05	0	5	1	92		05000

OPERATING MODE(9)	1	THIS REPORT IS SUBMITTED PURSUANT TO REQUIREMENTS OF 10CFR (Check one or more of the following)(11)							
			20.402(b)		20.405(c)		50.73(a)(2)(iv)		73.71(b)
POWER LEVEL(10)	100%		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	TELEPHONE NUMBER	
	AREA CODE	
Terry L. Pedersen, Supervisor, Safety Review Group	704	875-4487

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)		EXPECTED SUBMISSION DATE(15)	MONTH	DAY	YEAR
	YES (If yes, complete EXPECTED SUBMISSION DATE)	X NO			

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

On April 1, 1992, at approximately 1530, Operations (OPS) Support personnel had finished performing procedure PT/2/A/4200/28A, Train A Slave Relay Test. The OPS Support personnel were discussing a leak rate test that had been performed during Unit 2 End Of Cycle 7 (2EOC7) refueling outage. During this discussion, OPS Support Technician (OST) A was pointing out transmitters of interest to OST B, when OST A noticed the handle on the isolation valve for Containment Pressure Control System (CPCS) transmitter 2NSPT5390 was not fully extended in the open direction. Suspecting transmitter 2NSPT5390 may be isolated, OST A attempted to move the transmitter isolation valve in the closed direction and found the valve closed. With the transmitter isolation valve in the closed position, the CPCS for Containment Air Return Exchange and Hydrogen Skimmer (VX) system Train 2A is inoperable. This event is assigned a cause of Unknown because no reason could be determined as to how, why, or when the isolation valve to transmitter 2NSPT5390 was closed. The appropriate station personnel were notified and the CPCS for VX Train 2A was returned to operable status. All other Unit 1 and 2 CPCS transmitter isolation valves were verified open. Unit 1 and 2 were in Mode 1 (Power Operation) at 98 and 100 percent power, respectively, at the time of the event.

EVALUATION:

Background

The Containment Pressure Control System (CPCS) is part of the Engineered Safety Features Actuation System (ESFAS) [EIIS:JE] and is provided to prevent exceeding the negative design pressure of the Containment structure. The systems permissive and termination features are redundant and are accomplished by independent pressure switches [EIIS:PS] (2NSPT5380 and 2NSPT5390) which provide interlocks [illegible] to prohibit Containment Spray (NS) system [EIIS:BE], and the Containment Air [illegible] Hydrogen Skimmer (VX) system [EIIS:BB] operation when Containment pressure [illegible]. The system is designed such that no single failure can prevent proper NS or VX system initiation nor can it allow NS or VX system operation when not required. The 0.3 psig permissive termination feature is automatically reset such that under accident conditions, NS and VX system operation is automatically terminated upon pressure decay to 0.3 psig, thereby, controlling Containment pressure.

The VX system is designed to rapidly return air to lower Containment after initial loss of coolant blowdown. This is accomplished by the use of air return fans [EIIS:FAN]. A secondary function of this system is to prevent the build-up of hydrogen in dead ended compartments resulting from a Loss Of Coolant Accident (LOCA). This is accomplished by continuously drawing air out of the dead ended compartments at a rate that limits the hydrogen concentration to less than 4 percent.

The VX system contains two 100 percent capacity air return fans, each with a capacity of 30,000 cubic feet per minute (cfm). Both fans are automatically started when Containment pressure reaches 3.0 psig and a CPCS start permissive signal is received. The fans force the air from upper to lower Containment, thereby, returning the air which was displaced by the blowdown. An isolation damper [EIIS:DMP] is provided on the discharge of each fan and acts as a barrier between upper and lower Containment to prevent the air flow from bypassing the Ice Condenser [EIIS:COND] during initial blowdown phase of a LOCA.

The VX system also contains two 100 percent capacity hydrogen skimmer [EIIS:SKR] fans, each with a capacity of 3,000 cfm. A normally closed, motor operated inlet valve [EIIS:V] on the hydrogen skimmer header prevents the air flow from bypassing the Ice Condenser during initial blowdown. It remains closed until the end of initial blowdown. After initial blowdown, a start permissive from CPCS and Phase B (Sp) signal open the inlet valve. After the inlet valve has fully opened, the hydrogen skimmer fan will start.

Description of Event

On April 1, 1992, at approximately 1530, Operations (OPS) Support personnel had finished

performance of procedure PT/2/A/4200/28A, Train A Slave Relay Test, and were exiting the electrical penetration [EIIS:PEN] room located on the 750 elevation of the Auxiliary Building [EIIS:NF] (AB). While exiting the electrical penetration room, OPS Support Technician (OST) A and B were discussing a leak rate test that had been performed during the last Unit 2 refueling outage. During this discussion, OST A was pointing out some transmitters [EIIS:PT] of interest to OST B when OST A noticed the valve handle for transmitter 2NSPT5390 did not appear to be extended to the fully open position. Suspecting transmitter 2NSPT5390 was isolated, OST A attempted to move the isolation valve for transmitter 2NSPT5390 in the closed direction. The handle of the isolation valve rotated approximately 0.5 to 0.75 inches in the closed direction and stopped, indicating the valve was closed. Not knowing if the valve had been intentionally closed for maintenance or some other reason, OST A and B left the valve closed and proceeded to the Control Room (CR) [EIIS:NA]. At approximately 1535, OST A and B arrived in the CR and informed CR personnel they had finished procedure PT/2/A/4200/28A. While in the CR area, OST A talked to a CR Operator (CRO) about the status of transmitter 2NSPT5390. The CRO told OST A that the transmitter supplied pressure indication to the CR. At approximately 1545, OST A and B reported to their work area and informed the OPS Support Supervisor that the isolation valve for transmitter 2NSPT5390 had been found closed. The OPS Support Supervisor called the CR Senior Reactor Operator (SRO) and informed the SRO that transmitter 2NSPT5390 had been found isolated. The CR SRO contacted Instrument and Electrical (IAE) personnel and requested they verify the position of transmitter 2NSPT5390 isolation valve. IAE personnel proceeded to the electrical penetration room and verified transmitter 2NSPT5390 isolation valve was closed which made VX Train 2A inoperable. Upon reporting this to the CR SRO, IAE was directed to open the valve and place the transmitter in service. At 1600, on April 1, 1992, transmitter 2NSPT5390 was placed in service returning the CPCS for VX Train 2A to operable. IAE personnel then verified all other CPCS transmitter isolation valves were open on Units 1 and 2. OPS personnel subsequently wrote work requests 147283 and 147284 to verify isolation valves on Units 1 and 2 were positioned properly on the following systems for instruments without continuous indication:

- Auxiliary Feedwater
- Residual Heat Removal
- Chemical Volume and Control
- Nuclear Service Water
- Containment Air Addition and Release
- Liquid Waste

All valves inspected were found to be positioned properly and this inspection was completed by April 8, 1992.

Conclusion

This event is assigned a cause of Unknown because of a possible inappropriate action. This

investigation could not determine when, why, or how the isolation valve for transmitter 2NSPT5390 was closed. During normal operation, CR indications from pressure transmitter 2NSPT5390 are at zero psi. Therefore, routine CR instrument checks would not have identified that the isolation valve for pressure transmitter 2NSPT5390 was closed.

This investigation did reveal that the last time the valve was closed was on May 22, 1991, when IAE personnel performed preventive maintenance on transmitter 2NSPT5390, as documented on work request 06510C. Procedure IP/0/A/3050/05A, Containment Pressure Control Loop Calibration, enclosure 11.1 documents the valve as being opened and independently verified open by a second individual. No documentation of other maintenance performed on transmitter 2NSPT5390 was found until the date of discovery. On February 18, 1992, OPS Support personnel performed procedure PT/2/A/4200/01Q, Penetration Leak Rate Test. At this time, the valve was verified open by OPS Support personnel but no independent verification was required. The normal method used by OPS Support personnel to verify a transmitter isolation valve open is to turn the valve approximately 1/4 turn in the closed direction and reopen the valve to the fully open position. There are three other transmitters that are leak tested at the same time transmitter 2NSPT5390 is tested. The transmitters are spaced approximately three feet apart and each one has a single isolation valve and all four valves are oriented in the same direction. Each valve must be rotated in the closed direction 5 to 6 turns to fully close the valve. Therefore, it is very unlikely the valve was inadvertently closed during penetration testing. These valves are located on the 750 elevation of the AB in the electrical penetration room approximately 6.5 feet above the floor. They are in a well lighted, low traffic area and are properly labeled; therefore, it is very unlikely that the isolation valve to transmitter 2NSPT5390 was bumped closed or positioned as a wrong component.

Technical Specification 3/4.3.2 requires CPCS to be operable in Modes 1 (Power Operation), 2 (Startup), 3 (Hot Standby), and 4 (Hot Shutdown). Technical Specification 3.0.4 prohibits entry into an operational mode or other specified condition where the conditions for the limiting condition for operation are not met and the associated action requires a shutdown if they are not met within a specified time interval. Unit 2 entered Mode 4 on March 12, 1992, at 0125. When Unit 2 entered Mode 4 with the CPCS for VX Train 2A inoperable, Technical Specification 3.0.4 was violated. Assuming the isolation valve for transmitter 2NSPT5390 was closed at some time after February 18, 1992, Technical Specification 3/4.3.2 was violated from March 12, 1992 until April 1, 1992 at which time CPCS for VX Train 2A was returned to operable status.

On March 28, 1992, VX Train 2B was inoperable for one hour, and on April 1, 1992, VX Train 2B was inoperable for one hour and twenty minutes. This technically placed Unit 2 in Technical Specification 3.0.3, which states that when a limiting condition of operation is not met, except as provided in the associated action requirements, within 1 hour action shall

be initiated to place the unit in a condition in which the limiting condition does not apply. However, the inoperability of VX Train 2A was unknown and Technical Specification 3.0.3 was not entered. Because the time VX Train 2B was inoperable was less than the total time allowed by the action statement for Technical Specification 3.0.3, Technical Specification 3.0.3 was not violated.

This event did not cause any significant operational problem or difficulties. The VX system only operates during accident conditions when Containment pressure is 3.0 psig or greater. At no time during this event was the VX system actuated or required to actuate to mitigate the consequences of the accident.

A review of the Operating Experience Program (OEP) data base for the twenty-four months prior to this event revealed two LERs concerning component misposition events which resulted in Technical Specification violations with a cause of Unknown due to a possible inappropriate action. LER 370/90-10 documents an event in which the inlet valve to 2EMF 38, 39, and 40 was found partially opened. LER 370/91-02 documents an event in which a sliding link to valve 2CA-116 was found open. Therefore, Technical Specification violations due to mispositioned devices because of a possible inappropriate action is considered recurring. The corrective actions documented in LERs 370/91-02 and 370/90-10 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 radioactive releases as a result of this event.

CORRECTIVE ACTIONS:

Immediate: 1) IAE personnel verified the isolation valve to transmitter 2NSPT5390 was isolated.

2) IAE personnel returned transmitter 2NSPT5390 to operable status.

3) IAE personnel verified all CPCS transmitter isolation valves were open on Units 1 and 2.

Subsequent: 1) Isolation valves were verified positioned properly on the following systems for instruments without continuous indication:

- Auxiliary Feedwater
- Residual Heat Removal
- Chemical Volume and Control

- Nuclear Service Water
- Containment Air Addition and Release
- Liquid Waste

Planned: 1) A working group that uses Human Performance Enhancement System (HPES) methodologies will be established to investigate, track, determine causes of, and develop solutions to component mispositioning events at McGuire Nuclear Station.

SAFETY ANALYSIS:

During this event, VX Train 2A was inoperable. CPCS transmitter 2NSPT5390 provides a start permissive and termination signal to VX Air Return Fan 2A and Hydrogen Skimmer Fan 2A. The CPCS start permissive allows the VX fans to automatically start upon receipt of an SP signal of 3.0 psig in Containment after a 10 minute time delay. With transmitter 2NSPT5390 isolated, the VX Air Return Fan 2A and Hydrogen Skimmer Fan 2A would not have automatically started. In the event VX Train 2A had been required to perform its design function and had not automatically started, emergency operating procedures require CR personnel to verify proper operation of the VX system. Failure of VX Train 2A to start would have been detected by CR personnel and would have been started manually as directed by the emergency operating procedures.

VX Train 2B was technically inoperable on two occasions for a brief period of time during this event. During the times VX Train 2B was inoperable, the CPCS for VX Train 2B was placed in the start permissive mode, therefore, VX Train 2B was capable of performing its design function during this event. One train of the VX system is sufficient to mitigate the consequences of a LOCA. The required ESFAS components were operable during this event. Therefore, the inoperability of VX Train 2A would not have adversely affected the ability of the ESFAS and OPS personnel to mitigate the consequences of an accident.

This event did not affect the health and safety of the public or onsite personnel.