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DUKE POWER

July 17, 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 370/92-08

Gentlemen:

Pursuant to 10 CFR 50.73 Sections (a) (1) and (i), attached is Licensee Event Report 370/92-08 concerning the inoperability of Power Operator Relief Valve 2NC-36. 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

T. C. McMeekin

TLB/bcb

Attachment

cc: Mr. S.D. Ebnetter
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LICENSEE EVENT REPORT (LER)

FACILITY NAME(1)

McGuire Nuclear Station

DOCKET NUMBER(2)

05000 370

PAGE(3)

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TITLE(4) A Technical Specification Was Violated On Unit 2 Because Power Operated Relief Valve 2NC-36 Was Inoperable Due To An Unknown.

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)
06	03	92	92	08	1	07	17	92	N/A	05000
										05000

OPERATING MODE(9)

4

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(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)	50.73(a)(2)(i)	X 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)(K)	

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 NRC	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRC
									No

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 May 22, 1992, Operations (OPS) personnel unsuccessfully performed a valve stroke timing test on valve 2NC-36 (Pressurizer Power Operated Relief Valve). Valve 2NC-36 was declared inoperable and logged in the Technical Specification Action Item Logbook (TSAIL) because the valve failed the surveillance testing. OPS personnel issued work request 143126 to investigate and repair valve 2NC-36. Instrumentation and Electrical (IAE) personnel investigating the problem on June 3, 1992, discovered that valve 2VI-1753 (VI Instrument Air, Supply To 2NC-36), was closed. IAE personnel subsequently returned valve 2VI-1753 to the opened position. The last verification of the position on valve 2VI-1753, showed the valve to be open. This verification took place on March 14, 1992, when Tagout Record Sheet (R+R) 22-328 was cleared by a Non Licensed Operator (NLO), restoring the valve to the open position. At the time of this event, Unit 2 was in Mode 4 (Hot Shutdown). PORV 2NC-36 was successfully stroked and timed on June 20, 1992. The investigation into this event was unable to determine why valve 2VI-1753 was mispositioned. This event has, therefore, been classified as an Unknown. The circumstances as stated in this report will be evaluated by the HPES working group reviewing mispositioned devices, and appropriate recommendations will be made to aid in preventing component mispositionings.

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EVALUATION:

Background

Valves 2NC-32, 2NC-34, 2NC-36, Power Operated Relief Valves (PORVs) [EIIS:RV], are designed to limit pressurizer [EIIS:PER] pressure to a value below the fixed high pressure reactor trip setpoint. This will prevent actuation of the fixed high pressure reactor trip during a large power mismatch. These valves are also used for an automatic actuation to protect against inadvertent overpressurization of the reactor [EIIS:RCT] vessel [EIIS:VSL] at water solid, low temperature conditions. The valves are normally supplied by the Instrument Air (VI) system [EIIS:LD], while nitrogen from the Cold Leg Accumulators [EIIS:ACC] provides the assured supply to the PORVs.

Technical Specification (TS) 3/4.4.4 states all PORVs and their associated block [EIIS:BLK] valves [EIIS:V] shall be operable in Modes 1, (Power Operation), 2 (Start up), and 3 (Hot Standby). With one or more PORVs inoperable, within one hour either restore the PORV(s) to operable status or close the associated block valve(s) and remove power from the block valve(s); otherwise be in at least Hot Standby within the next 6 hours and in Cold Shutdown within the following 30 hours.

The VI system supplies oil free, dried air to all instrumentation, diaphragm operated valves, piston operated valves, and any other equipment, where required.

T.S. 3.4.9.3 requires that as part of the Overpressure Protection System, two PORVs with a lift setting of ≤ 400 psig be operable in Mode 4 (Hot Shutdown) when the temperature of any Reactor Coolant (NC) cold leg is ≤ 300 degrees Fahrenheit, Mode 5 (Cold Shutdown) and Mode 6 (Refueling) with the reactor vessel head on. The two PORVs used to meet the requirement are valves 2NC-32 and 2NC-34. Valve 2NC-36 is also tested as a good operating practice.

Description of Event

On May 22, 1992, with Unit 2 in Mode 4, Performance and Operations (OPS) personnel were performing procedure PT/2/A/4151/03B, NC Train B Valve Stroke Timing Using Accumulator Pressure, Shutdown, on valve 2NC-36. The procedure, along with procedure PT/2/A/4151/03A, NC Train A Valve Stroke Timing Using Accumulator Pressure, Shutdown, satisfies T.S. 3.4.9.3.a requirement for Overpressure Protection Systems by stroking and timing PORVs 2NC-32 and 2NC-34. Valve stroke timing was also being performed on valve 2NC-36 as good operating practice. Stroking and timing had been successfully performed on valve 2NC-32 prior to this event. However, valve 2NC-36 would not open when stroked by OPS personnel. Valve 2NC-36 was declared inoperable and logged in the Technical Specification Action Item

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Logbook (TSAIL) as item number 18484 because it did not meet the surveillance requirements. OPS personnel generated work request 143126 to investigate and repair valve 2NC-36. On June 3, 1992, Instrumentation and Electrical (IAE) personnel investigating the problem discovered valve 2VI-1753 (VI Supply to 2NC-36) was closed. This valve supplies the motive force to PORV 2NC-36. Valve 2VI-1753 was a new valve and had been installed under McGuire Exempt Variation Notice (MEVN) -2879 during the End Of Cycle (EOC) 7 refueling outage. Valve 2VI-1753 was opened by the investigating IAE personnel, after receiving permission from OPS personnel, and valve 2NC-36 was successfully stroked and timed on June 20, 1992, and cleared from the TSAIL.

Conclusion

This event has been assigned a cause of Unknown because it cannot be conclusively determined why valve 2VI-1753 was in the closed position. In September, 1991, MEVN-2879 was generated to install a new 2 inch VI isolation valve [EIS:ISV] and branch tee in the 2 inch VI supply header upstream of valve 2VI-264, (formally B Header Containment 733' 6 Inch VI Connection). Valve 2VI-264 now supplies VI to PORV 2NC-32 and the new 2 inch VI valve (2VI-1753) supplies VI to PORV 2NC-36 (see one line diagram on page 7). The work was scheduled for the Unit 2 EOC 7 refueling outage and clearance to begin work was given to Generation Services Department (GSD) IAE Modification personnel by OPS personnel on February 6, 1992. The valve was installed in early February.

During the outage, and after receiving permission from the IAE Modification personnel responsible for implementation of MEVN-2879, OPS personnel issued Tagout Record Sheet (R&R) 22-328 for valve 2VI-1753, on February 15, 1992, in support of establishing Containment integrity. Since work related to the PORVs was still in progress downstream of valve 2VI-1753, the "Removed Position" on the R&R for valve 2VI-1753 was in the closed position. Non Licensed Operator (NLO) A sent to verify the position of the valve, stated the valve was already closed, however, he backed it off of the seat to make sure it was actually closed and not stuck in an intermediate position, and then reclosed the valve.

On March 14, 1992, R&R 22-328 was issued to NLO B for clearance, as part of the unit startup process. The NLO E, charged with clearing the R&R, stated he realized the importance of restoring the valve in the open position and proceeded to complete this task early in the shift. When interviewing NLO B, he remembered climbing to the top of the PZR, where the valve was located and opening the valve. When questioned concerning the valve, NLO B stated the valve was located at an angle and he had to reach up to operate it, however, NLO B feels certain he opened the valve. When questioning the IAE personnel who discovered the valve closed, they also stated the valve was at an angle, or sideways, however, there was no difficulty determining which way to turn the valve handle to close

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or open the valve. In fact, one of the IAE personnel stated there was an indication on the valve body indicating the direction to turn the valve for the open position. R&R 22-328 was logged as cleared in the Reactor Operators (ROs) logbook at 1842, on March 14, 1992.

Since NLO B stated that he feels certain he left the valve in the open position, it can only be speculated that the possibility exists that valve 2VI-1753 was accidentally knocked or brushed up against during the performance of the containment walkdown, where OPS, Maintenance, Quality Assurance, and IAE personnel access containment in search of post maintenance system leaks. The containment walkdown took place on the same day NLO B cleared R&R 22-328. The IAE personnel who discovered valve 2VI-1753 closed, stated it would be easy to brush up against, knock closed (or open), or even stand on the valve to access other equipment due to the location of the valve in the PZR cavity. However, it cannot be proven that this was the cause.

It must be assumed that valve 2VI-1753 was closed sometime after NLO B opened it, on March 14, 1992, thereby, causing PORV 2NC-36 to be inoperable from some time on March 14, 1992, while Unit 2 was in Mode 3, until when it was discovered on May 22, 1992, during surveillance testing and Unit 2 was in Mode 4 for the SG Tube Inspection (108B). This resulted in a violation of TS 3/4.4.4 during that period of time. The circumstances as stated in this report will be evaluated by the HPES working group reviewing mispositioned devices, and appropriate recommendations made to aid in preventing component mispositioning.

This event is also assigned a cause of Inappropriate Action due to an inadequate evaluation performed on R&R 22-328. The PORVs are required, by TS to be operable during Modes 1, 2, and 3. During the investigation, it was learned that Unit 2 entered Mode 3 on March 12, 1992, at 2243. The clearance of R&R 22-328, which returned VI supply to PORV 2NC-36, did not occur until March 14, 1992, and was logged in the Unit 2 RO logbook at 1842. This is approximately 44 hours after Unit 2 entered Mode 3. Therefore, 2NC-36 was technically inoperable during this time. When interviewing OPS personnel to determine the process used to evaluate outstanding R&Rs, it was learned that there are various evaluation methods employed, therefore, Operations Management will provide guidance to Senior Reactor Operators on performing adequate R&R evaluations during mode changes. This investigation was unable to determine why the R&R in question was improperly evaluated since personnel involved do not recall the circumstances surrounding this event.

A review of the Operating Experience Program (OEP) database for twenty-four months prior to this event revealed seven reportable events involving mispositioned valves and seventeen non-reportable events (Problem Investigation Reports) involving mispositioned

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breakers/valves/equipment. Of the seven reportable events, two were due to Unknown causes. LER 369/91-14 involved the inoperability of Train A of the Containment Spray (NS) system [EISS:BE] because of a mispositioned valve. LER 370/92-05 involved the inoperability of the Containment Pressure and Control System (CPCS) because of a mispositioned valve. The corrective actions for LER 369/91-14 included ensuring the valve stem lock nuts are tightened on all Unit 1 and 2 throttled Nuclear Service Water (RN) system [EISS:BI] flow balance related valves; revising Station Directive 3.1.5, Activities Affecting Station Operations or Operating Indications, to add a requirement for station personnel to notify the Control Room [EISS:NA] Senior Reactor Operator if a plant device is found mispositioned or misaligned; and having Maintenance personnel cover the event with Maintenance Technicians stressing the importance of notifying OPS Control Room personnel if a plant device is found mispositioned or misaligned. The corrective action for LER 370/92-05 involved the establishment of a working group that uses Human Performance Enhancement System (HPES) methodologies to investigate, track, determine causes of, and develop solutions to component mispositioning events at McGuire Nuclear Station.

When valve 2VI-1753 was found mispositioned by IAE personnel while investigating why valve 2NC-36 would not open (work request 143126), the IAE personnel involved did notify OPS Control Room personnel of their discovery, however, that did not prevent this event from occurring. The working group using HPES methodologies has just recently been established and will evaluate this event.

The remaining corrective actions were specific to the particular event and would not have prevented this event from occurring. However, mispositioned valves/breakers is a recurring problem at McGuire Nuclear Station.

A review of the OEP database for events with a cause of Inappropriate Action attributed to a lack of attention to detail revealed eight reportable events and one non-reportable event. Of the reportable events, four involved the Operations group. A review of the corrective actions for these events revealed that none of these corrective actions would have prevented this event from occurring. TS violations attributed to a lack of attention to detail is, however, considered to be a recurring problem.

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

CORRECTIVE ACTIONS:

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Immediate: 1) Work request 143126 was issued by OPS personnel to investigate and repair valve 2NC-36.

Subsequent: 1) Valve 2VI-1753 was opened by IAE personnel on June 3, 1992.

2) Valve 2NC-36 was successfully stroked and timed on June 20, 1992.

Planned: 1) This report will be forwarded to the HPES working group reviewing mispositioned devices, for further evaluation and recommendation.

2) Operations Management will revise the Unit 1 and Unit 2 controlling procedures for unit startup to require the actual outstanding R&Rs to be referenced. These procedure changes will be communicated to Senior Reactor Operators in the form of a reading package.

SAFETY ANALYSIS:

The isolation of valve 2VI-1753 rendered PORV 2NC-36 inoperable for some unknown period of time from March 14, 1992, until discovery on May 22, 1992. From May 22, 1992, until June 20, 1992, the valve was logged inoperable because it failed to meet the surveillance. Even though the valve was logged inoperable during this time frame, May 22, 1992 to June 20, 1992, when it was successfully tested, it was not required by TSS until Unit 2 reached Mode 3 on June 25, 1992.

The pressurizer PORVs limit system pressure for a large power mismatch and thus prevent actuation of the fixed high pressure reactor trip. In the event of a Reactor trip and NC system pressure continues to increase, the PZR code safety valves will open to limit NC system pressure to a value less than the design pressure to ensure NC system integrity is not breached.

In the event of a complete loss of heat sink, prevention of the NC system against overpressure is afforded by pressurizer and steam generator [EISS:SG] safety valves along with any of the following reactor trip functions: a reactor trip on turbine [EISS:TRB] trip, high pressurizer pressure reactor trip, overtemperature delta temperature reactor trip, low feedwater flow reactor trip, or low steam generator water level reactor trip.

The upper limit of overpressure protection is based upon the positive surge of the reactor coolant produced as the result of a turbine trip under full load, assuming the core continues to produce full power. The self actuated safety valves are sized on the basis of steam flow from the pressurizer to accommodate this surge to a setpoint of 2500 psia

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and a total accumulation of three percent. No credit is taken for the PORVs during this surge, but credit is taken for the self actuated steam generator safety valves.

During the suspected time valve 2NC-36 was inoperable, the Unit 2 PORVs were not challenged.

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

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MEVN-2879

