



DUKE POWER

October 23, 1989

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 370/89-10

Gentlemen:

Pursuant to 10 CFR 50.73 Sections (a)(1) and (d), attached is Voluntary Licensee Event Report 370/89-10 concerning a leak that occurred on Containment Spray Heat Exchanger 2A after valve testing. This report is being submitted in accordance with 10 CFR 50.73 as a voluntary report. This event is considered to be of no significance with respect to the health and safety of the public.

Very truly yours,

T.L. McConnell

T.L. McConnell

DVE/ADJ/cbl

Attachment

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MC-815-04
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LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)
McGuire Nuclear Station, Unit 2

DOCKET NUMBER (2)
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PAGE (3)
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TITLE (4)
A Leak Occurred On Containment Spray Heat Exchanger 2A After Valve Stroke Timing Because Of A Deficient Procedure And An Inappropriate Action

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)
0	9	05	89	89	010	00	10	23	89	N/A
										0 5 0 0 0 0

OPERATING MODE (9) 5	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 5 (Check one or more of the following) (11)									
	20.402(b)			20.406(c)			50.73(a)(2)(iv)			73.71(b)
	20.404(a)(1)(ii)			50.36(a)(1)			50.73(a)(2)(vi)			73.71(c)
	20.406(a)(1)(iii)			50.36(a)(2)			50.73(a)(2)(vii)			<input checked="" type="checkbox"/> OTHER (Specify in Abstract Below and in Text, NRC Form 306A)
	20.508(a)(1)(iii)			50.73(a)(2)(i)			50.73(a)(2)(viii)(A)			Voluntary LER
	20.426(a)(1)(iv)			50.73(a)(2)(ii)			50.73(a)(2)(viii)(B)			

LICENSEE CONTACT FOR THIS LER (12)

NAME: Alan Sipe, Chairman, McGuire Safety Review Group

TELEPHONE NUMBER: 704 875-4183

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)									
CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRRDS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRRDS
A	B/E	HX	D100	Y					

SUPPLEMENTAL REPORT EXPECTED (14)

YES (1) NO (2)

EXPECTED SUBMISSION DATE (15)

MONTH: CA: YEAR:

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

On September 5, 1989, at approximately 1609, Control Room (CR) personnel opened valve 2NS-18A, Containment Spray (NS) Pump 2A Suction From Containment Sump Block, for stroke time measurement. CR personnel then noticed Pressurizer level decreasing and Pressurizer Relief Tank level increasing and closed valve 2NS-18A. At approximately 1655, a leak was reported in the Auxiliary Building 716' elevation pipe chase. About a minute later level began decreasing in the Refueling Water Storage Tank. After several valve manipulations, CR personnel determined the problem was with NS Heat Exchanger (HX) 2A. A visual inspection at 1900 revealed a leak on the HX at the lower head gasket. CR personnel closed valve 2NS-20A, NS Pump 2A Suction From Refueling Water Storage Tank Block, which isolated the leak. Later estimates concluded that approximately 10,000 gallons of water leaked through the gasket. This event is assigned a cause of Procedure Deficiency because of ambiguous and incomplete information concerning stroking of valve 2NS-18A. This event is also assigned a cause of inappropriate Action because of lack of attention to detail. The gasket was replaced and the affected NS system piping was analyzed and returned to service. Unit 2 was in Mode 5, Cold Shutdown, with the Reactor Coolant system at 305 psi and 139.5 degrees-F, and Residual Heat Removal (ND) Pump 2A in operation. This report is being written as a Voluntary LER.

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

EVALUATION:

Background

The NS system [EIIS:BE] is an engineered safety feature which serves to remove thermal energy from the Containment in the event of a Loss Of Coolant Accident (LOCA). It performs this function in conjunction with the Emergency Core Cooling System (ECCS), which cools the Reactor [EIIS:RCT] core by direct injection. After all the ice from the Ice Condenser has melted, the heat removal capability of the spray system will keep the Containment pressure below the design pressure of 15 psig.

The NS system consists of two pumps [EIIS:P] and two heat exchangers [EIIS:HX] in parallel, with associated piping, valves [EIIS:V], and spray headers. These spray headers are located in the upper Containment volume. This system is supplemented with two ND system pumps and two ND heat exchangers in parallel, with associated piping, valves, and individual spray headers. These spray headers are also located in Upper Containment.

The NS HXs are of the shell and tube type with the tubes welded to the tube sheet. Borated water from either the Refueling Water [EIIS:DA] Storage Tank [EIIS:TK] (RWST) or the lower compartment of the Containment circulates through the tubes while nuclear service water circulates through the shell side. The spray heat exchangers are designed to assure adequate heat removal capacity from the water during the recirculation mode. The NS HXs were manufactured by Delta Southern.

The head gaskets for the NS HXs are Garlock "Blue-Gard", style 3000, which is a suitable compressible gasket for this application. Torque value for the gasket bolts is 150 ft-lbs as required by procedure MP/O/A/7150/069, Containment Spray Heat Exchange Cover Plate Removal. The HXs were preoperationally hydrostatically pressurized to 345 psig by the manufacturer.

The NS system was preoperationally hydrostatically tested by Duke Power's Construction Department according to established ASME Section III code procedures. The actual hydrostatic pressure was 284 psig. The normal operating pressure of the NS system is approximately 170 psig.

The primary function of the ND system [EIIS:BP] is to remove heat energy from the Reactor Core and Reactor Coolant (NC) system [EIIS:AB] during plant cooldown and refueling operations. This system is also used as part of the Safety Injection (Ni) system [EIIS:BQ] and NS system. As a secondary function, the ND system is used to transfer refueling water between the RWST and the Refueling Canal at the beginning and end of refueling operations. Two motor-operated valves (ND-1B and ND-2A, NC Loop C Discharge to ND System Isolation) located in series isolate the ND section piping from the NC system.

Description of Event

On September 5, 1989, at approximately 1600, Performance (PRF) personnel presented CR personnel with a list of valves to be stroke timed. These valves were required

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APPROVED OMB NO. 3150-0104
EXPIRES 6/30/88

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TEXT (If more space is required, use additional NRC Form 288A's) (17)

to be stroke timed before Unit 2 entered Mode 4, Hot Shutdown. Included was valve 2NS-18A, which would be stroked using procedure PT/2/A/4208/02, NS Valve Stroke Timing - Quarterly. Operator A in the Control Room [EIIS:NA] reviewed the portion of the procedure applicable to valve 2NS-18A to ensure all prerequisites were met and to evaluate system conditions before opening the valve. After his review and evaluation were completed, Operator A granted permission to cycle valve 2NS-18A. The NC system was at 305 psi and 139.5 degrees-F with ND Pump 2B in operation (reference page 10 of 12).

At 1608:59, CR personnel opened the valve. The valve became fully opened at 1609:10. CR personnel then noticed the level decreasing in the Pressurizer [EIIS:PZR] and the level increasing in the Pressurizer Relief Tank. They also noticed NC system pressure decreasing and ND system pressure decreasing. Valve 2NS-18A was closed at 1610:29 and became fully closed at 1610:39. An operator was sent to check NS Pump 2A for damage. No damage was observed. At 1629, CR personnel opened valve 2NS-20A as allowed by procedure to return to the pre-test valve alignment. Radwaste Chemistry personnel notified CR personnel at approximately 1655, of flooding in the Auxiliary Building [EIIS:NF] at the 716' elevation pipe chase. Water was coming through Spent Fuel Pool Cooling (KF) system Filter [EIIS:FLT] Pit reach rod holes. At 1556, CR personnel noticed RWST level decreasing and closed valve 2NS-20A. An operator went to the 716' elevation pipe chase to observe the flooding. He then isolated the Spent Fuel Pool Purification system valve which appeared to stop the flooding. Mechanical Maintenance (MNT) personnel removed a cover from the KF system Filter Pit which revealed the pit level decreasing. The Spent Fuel Pool Purification system was then restarted and no leaking was observed. CR personnel then re-opened valve 2NS-20A at 1823 and the pit level began to increase. CR personnel closed valve 2NS-20A at 1830. At 1900, Operator A, now believing the leak was associated with the NS system piping, went to the NS HX 2A room and observed water on the floor. He called the Control Room and had valve 2NS-20A opened. He then noticed water spraying from bottom of the HX which he suspected as being caused by a ruptured gasket. Valve 2NS-20A was subsequently closed which stopped the leak. Operator A then returned to the Control Room and submitted Work Request (WR) 139654 to repair the leak on the HX.

MNT personnel replaced the HX gasket on September 7, 1989 using WR 139654. The gasket was torqued to 200 ft-lbs as recommended by Design Engineering (D.E.) personnel. The nominal torque for this gasket is 150 ft-lbs. The HX cover to shell clearance was measured at the bolt circle to ensure gasket compression was not being hampered by metal to metal contact. Values measured at 4 points were approximately 0.07 inches. D.E. personnel also performed an Operability Evaluation on September 8, 1989 which concluded that the portion of the NS system exposed to NC pressure suffered no degradation which would prevent the NS system from being returned to service. However, this portion of the NS system was hydrostatically pressurized to 242 psi, which is 110 percent of the design operating pressure (220 psi). The NRC and Station Management felt it prudent to pressure test the new gasket installation. This test also revealed no resulting degradation. Valve 2NS-19, NS Pump 2A Suction Safety Relief, was independently pressure tested. During the test, this valve began leaking by and was subsequently repaired.

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TEXT (If more space is required, use additional NRC Form 288A's) (17)

IAE personnel also checked the calibration of the affected NS field instrumentation:

- pressure gauge 2MNSPG5100, manufactured by Weschler, range of 0-60 psi;
- pressure gauge 2MNSPG5120, manufactured by Barton, range of 0-1175 in. W.D.;
- pressure switch [EIIS:PS] 2MNSPS5080, manufactured by Weschler, range of 0-250 psig and a high setpoint of 197.34 psig increasing;
- and flow transmitter [EIIS:FT] 2MNSFT5020, manufactured by Weschler.

Pressure gauge 5100 was found damaged and had to be replaced, and the high setpoint of pressure switch 5080 was found at 185.9 psig and had to be recalibrated. This work was documented on WR 69526.

Conclusion

This event has been assigned a cause of Defective Procedure because of incomplete and ambiguous information. Section 12.5 of the NS Valve Timing procedure contains the step to stroke time valve 2NS-18A (reference page 11 of 12). Step 12.5.5, is the step where CR personnel became involved to grant permission to stroke the valve. This step reads "Ensure system conditions have been evaluated by Control Room Senior Reactor Operator (SRO) or Unit Supervisor, and specific permission for stroking 2NS-18A is granted." This step does not give any specific guidance to the CR personnel as to adverse conditions, situations, or valve alignments to be analyzed. It is left up to the CR personnel to ensure everything is satisfactory. The substeps contained in step 12.5.7 are actually prerequisites which direct attention to the NS system. In step 12.5.7c, a jumper is installed to allow operation of valve 2NS-18A without opening valve 2NI-185A, Containment Sump Line 2A Isolation, but only jumper connections are given and not the valves which are affected. Steps 12.5.7d and 12.5.7e focus on conditions necessary to prevent air induction into the NS or ND piping. No caution is given which addresses intersystem overpressurization (reference page 11 of 12). Steps 12.5.5, 12.5.7d, and 12.5.7e were added to this section on May 22, 1989, as a result of an incident on November 23, 1988 in which air became bound in the Unit 1 ND piping when valve 1NS-18A, NS Pump 1 Suction from Containment Sump Block, was stroke timed during mid-loop operation (reference LER 369/88-49). Operations personnel aided PRF personnel in the wording of this change.

On July 21, 1988, a non-reportable incident (Problem Investigation Report (PIR) 2-M88-0187) occurred involving the stroke timing of valve 2ND-58A, ND HX 2A Outlet to Centrifugal Charging Pump 2A and 2B Block, which overpressurized the Unit 2 Chemical and Volume Control (NV) [EIIS:CB] and NI pumps suction piping to the existing NC system pressure of approximately 325 psig. As a result of this incident, PRF personnel made procedure changes to the valve stroke timing procedures to ensure that ND system pressure is lower than NV and NI suction pressures when stroking valves ND-58A and NI-136A, ND HX B To Safety Injection Pump B. A similar change was made concerning valve FW-27A, FWST To ND Pump Isolation, to protect RWST piping. However, valves NS-18A and NS-1B, NS Pump B From Containment Sump Block, were overlooked during this review. PRF personnel stated they were concentrating on valves which could allow ND pump discharge pressure into another system.

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TEXT IF THIS SPACE IS REQUIRED, USE ADDITIONAL NRC Form 366A's (17)

This event has also been classified as an Inappropriate Action because of a lack of attention to detail. Operator A analyzed the existing system conditions for the possibility of introducing air into the NS or ND system, even though conditions existed to overpressurize the NS piping through valve 2ND-19, Supply to NC Loop A Control Bypass. As previously stated, the section of the NS valve timing procedure concerning valve 2NS-18A focused attention on preventing air induction into the NS or ND system. Operator A remembered the November 23, 1988 incident and had received training concerning the prevention of air binding pumps. He was also aware of the NRC's concern of this type problem. So, when he read the procedure step to evaluate system conditions and the procedure steps concerning air induction, his mind became focused on the air problem and not the potential for overpressurization. He stated he did not remember the July 21, 1988 incident of overpressurizing the NV pumps suction piping. He also stated that someone had told him that valve 2NS-1B had just been cycled several days ago. Knowing that the unit had not undergone a mode change, he erroneously assumed conditions had not changed. In addition, he stated he had been involved in valve timing procedures many times and had developed confidence in the adequacy of this procedure. Also, most CR personnel have developed confidence in periodic test procedures. Since most tests are performed on a periodic basis, most SROs have been involved with these without incident.

This test was performed on Tuesday, September 5, one day after the Labor Day holiday. Labor Day weekend was a relatively light work weekend because of the decreased number of personnel on site. However, with Unit 2 coming out of an outage, September 5, 1989 proved to be a busy, catch up day. The new Mode 4 date was moved up to September 13, 1989, with still many items and tests to be completed before Mode 4 could be entered. Operator A was responsible for coordinating activities and reviewing numerous periodic test work packages.

Different priorities exist between the Operations group and the PRF group when scheduling performance tests. During an outage, many tests, including valve timing tests, are scheduled during a block of time. It is the responsibility of Performance personnel to complete these tests in that time block, i.e. before entering Mode 4. However, maintenance is also scheduled during this same block of time, and because of various reasons may actually take longer than originally planned. PRF personnel are not able to perform many of their tests until maintenance is complete. Testing then tends to concentrate at the end of the time block after maintenance is complete. This presents problems to CR personnel who may have other procedures scheduled or other items that have a higher priority. Integrated Scheduling personnel have estimated that possibly up to 80 percent of outage work is performed on day shift, Monday through Saturday. Station personnel will evaluate the possibility of spreading out the workload to balance day/night refueling outage workload.

The head gasket for NS HX 2A had been replaced in October, 1988 as documented on WR 96042 and procedure MP/O/A/7150/069, Containment Spray Heat Exchanger Cover Plate Gasket Removal, and was torqued to 150 ft-lbs. The NS pumps were then run to ensure there were no leaks. However, after the leaking gasket was removed on September 7, 1989, MNT personnel noticed that a section of the gasket approximately 12 to 15 inches long and 1/8 to 3/16 inches wide (on the outside diameter) was not

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

compressed because of misalignment during the October, 1988 replacement. A gasket compression check was not documented in WR 96042 and there is no requirement to check gasket compression in the gasket removal procedure. McGuire Engineering Services (MES) personnel stated that because of the HX orientation and gasket cover configuration, it is almost impossible to check alignment (reference page 12 of 12). However, MES personnel have performed a review of the gasket removal procedure and believe that section 11.3 is adequate to ensure proper gasket alignment.

In the Operability Evaluation for the NS system dated September 8, 1989, D.E. personnel stated that a phenomenon called relaxation also contributed to the gasket leak. Relaxation occurs when a bolt loses its initial torque load as a result of conditions such as lack of proper bolt lubrication, thermal cycling, vibration, temperature gradients, pressure gradients, and loss of gasket resiliency after compression, and can be as high as 25 percent. Relaxation of initial bolt load (150 ft-lbs) resulted in a bolt load that, at best, was marginal and possibly below that required to withstand 305 psi, especially at the area of non-compression. However, DE personnel stated that even with the gasket misalignment and the relaxation phenomenon, 150 ft-lbs was sufficient torque to prevent a gasket leak at normal operating pressure. D.E. has recommended a torque value of 200 ft-lbs which will be incorporated into the appropriate procedures for an additional margin of safety.

During this incident, approximately 10,000 gallons of water leaked into the Auxiliary Building. About 2,000 gallons entered the NS system from the ND system. The RWST is located on 760' elevation and the NS HX leak was located at approximately 735' elevation. Therefore, when valve 2NS-20A was opened, water from the RWST gravity fed the HX leak. About 8,000 gallons drained from the RWST. Relief valve 2NS-19 lifted as required (Design lift pressure is 220 psig). However, this valve is on a 1 inch line and functions only as a relief for thermal expansion. Therefore, this line was not able to fully relieve the NS piping of the additional pressure. Based on chart recorder trends, about 200 gallons of water passed through this line into the Pressurizer Relief Tank.

A review of the previous year's incidents revealed 1 similar event. As described earlier, PIR 2-M88-0187 involved stroke timing valve 2ND-58A which overpressurized the Unit 2 NV and NI pumps suction piping to existing NC system pressure of 325 psig. Therefore, this event is recurring.

This event is Nuclear Plant Reliability Data System (NPRDS) reportable as an overpressurization event requiring component repair or replacement.

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

CORRECTIVE ACTIONS:

- Immediate: CR personnel closed valve 2NS-18A.
- Subsequent: 1) CR personnel closed valve 2NS-20A.

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- 2) MNT personnel replaced the gasket on NS HX 2A using WR 139654 on September 7, 1989.
- 3) PRF personnel successfully performed procedure PT/2/A/4208/01A, NS Pump 2A Performance Test.
- 4) PRF personnel successfully performed procedure PT/2/A/4208/010A, Train 2A NS HX Heat Balance Test.
- 5) DE personnel performed a component by component analysis of the affected portion of the Unit 2 NS system. This analysis is documented in calculations referenced in the resulting operability evaluation.
- 6) PRF personnel revised procedures PT/1 and 2/A/4208/02, NS Valve Stroke Timing-Quarterly, to require that one of the following conditions are met before stroke timing valve NS-18A or valve NS-1B:
 - valve ND-1, NC Loop C Discharge To ND System Isolation, and valve ND-2, NC Loop C Discharge To ND System Isolation are closed OR NC system pressure is less than 100 psig.
- 7) MNT personnel overtorqued the cover bolts on the replaced NS HX 2A gasket to 200 ft-lbs.
- 8) The affected portion of the NS system was successfully hydrostatically pressurized to 242 psi.
- 9) Relief valve 2NS-19 was rebuilt by MNT personnel.
- 10) Operations personnel reviewed this incident with personnel involved and with all Shift Supervisors.
- 11) MNS personnel checked the integrity and calibration of the affected NS field instrumentation. Pressure gauge 2MNSPG5100 was replaced and pressure switch 2MNSPS5080 was recalibrated.
- 12) MES personnel performed a walkdown of the affected portion of the NS system and discovered no visible degradations.
- 13) WRs 502675, 502676, and 502677 have been written by MNT personnel to remove and test the following valves to ensure that no internal degradation has occurred: valve 1NS-2, NS Pump 1B Suction Safety Relief; valve 1NS-19, NS Pump 1A Suction Safety Relief; and valve 2NS-2, NS Pump 2B Suction Safety Relief.

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

14) MNT personnel have written WRs 502627, 502628, and 502629 to overtorque NS HX 2B and Unit 1 NS HXs main gasket covers to 200 ft-lbs.

Planned:

- 1) MES personnel will make changes to procedure MP/0/A/7150/69, Containment Spray Heat Exchanger Cover Plate Gasket Removal, to increase the present torque value to 200 ft-lbs.
- 2) Operations, PRF, and D.E. personnel will review ECCS valves and identify system conditions allowable for valve stroke timing and produce a McGuire valve reference document for station use.
- 3) Based on the results of item 2, PRF personnel will upgrade appropriate valve stroke timing procedures.
- 4) Operations personnel will review existing training to ensure that incidents described in PIRs and LERs are covered with appropriate Operations personnel.
- 5) MES personnel will change section 9.0 of procedure MP/0/A/7150/69, Containment Spray Heat Exchanger Cover Plate Gasket Removal, to verify no external leakage during subsequent running of appropriate NS pump by PRF personnel after gasket replacement.
- 6) Integrated Scheduling personnel will facilitate a review to evaluate the possibility of balancing day/night refueling outage workload.
- 7) Operations Shift personnel will have 4 Shift SROs at the plant during outage times: 1 Shift Supervisor and 3 Assistant Shift Supervisors. This will spread the work load and decision making responsibilities over a larger number of knowledgeable individuals, thereby minimizing the work load on the SROs.

SAFETY ANALYSIS:

The stroke timing test of valve 2NS-18A caused the valve to be either fully or partially open for approximately one minute and forty seconds. During this time, approximately 2000 gallons of primary coolant were diverted to the pump suction piping of NS Train 2A via the in-service train of ND. Control Room indication of coincident decreasing Pressurizer level alerted Operators that a fairly significant leak or rupture had occurred and valve 2NS-18A was immediately closed.

The circumstances surrounding the scenario which occurred were of a nature such that comparison to the FSAR Chapter 15 Safety Analysis is conservatively non-applicable because of the Mode 5 conditions. However, for the purpose of classification, Section 15.6 of the FSAR describes Decreases in Reactor Coolant Inventory, within which this event is substantially bounded by either the "Inadvertent Opening of a Pressurizer Safety Valve or Relief" event, or the "Loss

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APPROVED OMB NO. 3150-0106
EXPIRES 8/31/86

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of Coolant Accident." The event which occurred amounts to a momentary loss of primary coolant of a measurable amount, during Mode 5 conditions, which later became radiologically diluted with borated water from an alternate source.

In the event that valve 2NS-18A was unable to close or be closed, valve 2ND-19 was capable of being closed from the Control Room. However, if conditions had progressed to a point indicating the symptoms of a loss of residual heat removal capability, such conditions would be covered by the symptoms and guidelines of AP/2/A/5500/19, Loss of Residual Heat Removal System, Case IV, Leak or Rupture of ND system. Case IV directs the securing of ND Pumps, isolation from the NC System, isolation of the leak, and restart of the ND Pumps.

Automatic control associated with charging and letdown, which would have been in service at the time of the event, would have responded to makeup NC inventory based on pressurizer level response. Decreasing pressurizer level would result in modulation of the Centrifugal Charging Pump (CCP) discharge control valve for the usual case of normal charging with one of the CCPs, or by an increase in the Reciprocating Charging Pump (PDP) speed for PDP operation.

An assessment of the consequences of a similar event occurring during power operation is not applicable since the ND System would be out of service and isolated from the NC System.

The cause of the leaking heat exchanger gasket, the cycling of valve 2NS-18A, was corrected unknowingly by reclosing the valve according to the test procedure, which initially also secured the feeding of the system leak. However, exiting the test procedure involved returning valves to a normal lineup position which for valve 2NS-20A was open. This provided an alternate flowpath to the NS Pump suction from the Refueling Water Storage Tank (RWST), an uncontaminated borated water source. Flow was propagated by a static head relative to the pump. Complications in identifying the leak source as the HX head gasket resulted in several cyclings of valve 2NS-20A, which over approximately a three-hour period, produced a total spilled volume of roughly 10,000 gallons.

Approximately 14 percent of the Unit 2 Auxiliary Building, involving elevations 733', 716', and 695', became contaminated. This was due to water leaking through duct work, penetrations, and drains. The contamination levels in the NS HX 2A room measured from 180 mrad/100 cm² to 800 mrad/100cm² at the HX where the leak occurred. Contamination levels in the area outside the HX room measured from 1000 dpm/100 cm² to 50 mrad/100 cm². Airborne activity as a result of this incident did not exceed 25 percent of the maximum permissible concentration as defined in 10CFR20 Appendix B. The water was analyzed to be decayed primary coolant with normal activity containing no noble gases or iodines. Also, the contaminated water was entirely contained within the Auxiliary Building. There was no release of water to the outside environment.

The spilled water cleanup is essentially complete, with a few minor areas remaining.

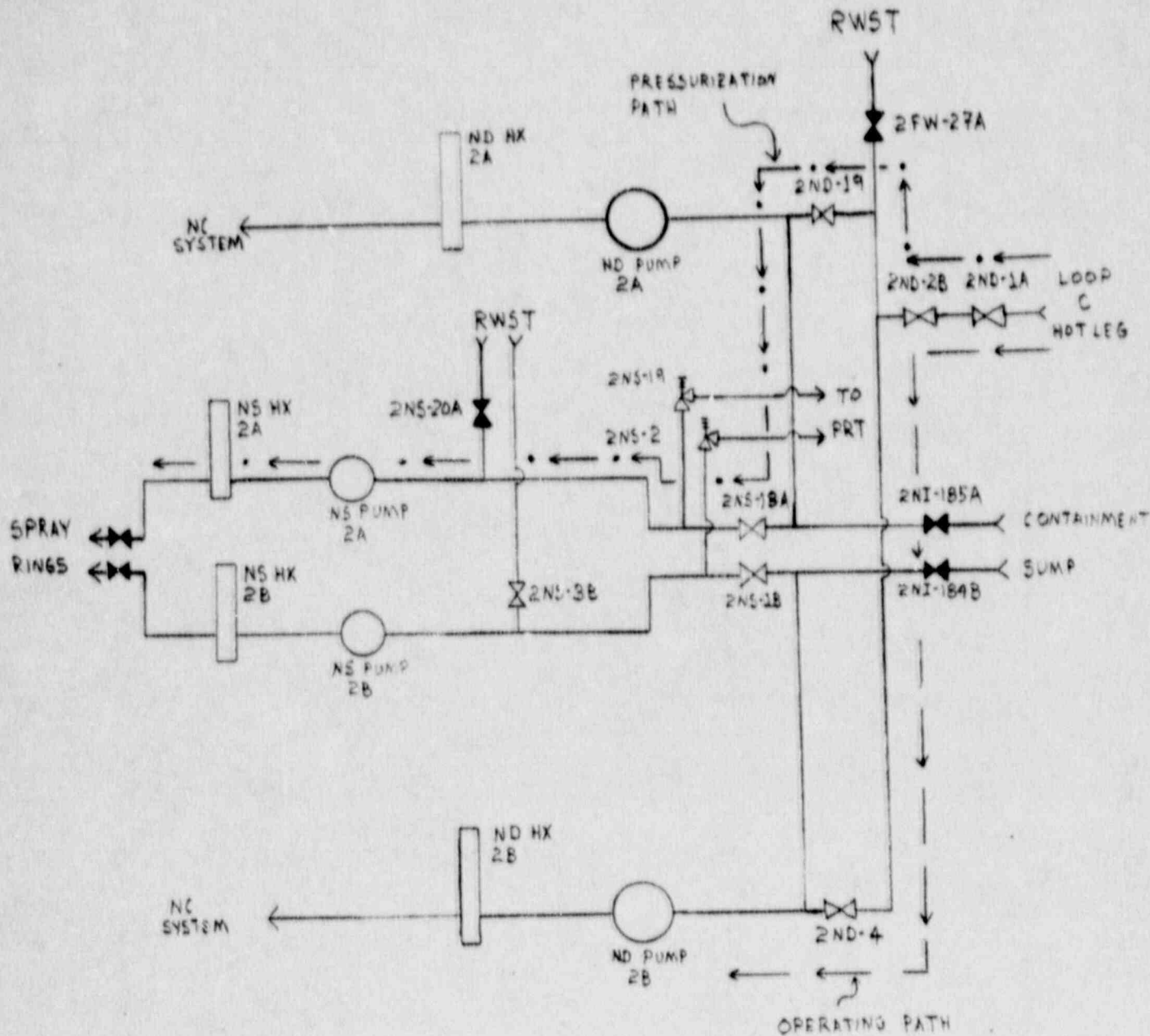
This incident did not affect the health and safety of the public.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME (1) McGuire Nuclear Station, Unit 2	DOCKET NUMBER (2) 0500037089	LER NUMBER (6)			PAGE (3)	
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER		
		0	10	00	1	0 OF 1

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

Valve Alignment At Time Of Leak



LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME (1) McGuire Nuclear Station, Unit 2	DOCKET NUMBER (2) 0 5 0 0 0 3 7 0	LER NUMBER (6)			PAGE (3)	
		YEAR 8 9	SEQUENTIAL NUMBER 0 1 0	REVISION NUMBER 0 0	1 1	OF 1 2

TEXT IF MORE SPACE IS REQUIRED. Use additional NRC Form 200A's (17)

INFORMATION ONLY

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12.5 Valve Stroke Timing for 2NS18A - NS Pump 2A Suction from Cont. Sump Block

Initial/Date

___/___

TEST PREPARATION

- 12.5.1 If valve is administratively controlled in its safety position, verify valve is recorded in PT/2/A/4203/01, Performance Special Valve Controlling Procedure and N/A remaining Section 12.5.
- 12.5.2 Record previous valve stroke time: PVST _____.
- 12.5.3 Record date of last remote position indicator verification:
Date _____.
- 12.5.4 Record Reference Stroke Time Range from IVV Data Base:
Range _____ to _____.

TEST METHOD

___/___ (SRO)
___/___

- 12.5.5 Ensure system conditions have been evaluated by Control Room SRO or Unit Supervisor, and specific permission for stroking 2NS18A is granted.

- 12.5.6 Required Unit Status: None
Record current operational mode: _____.

- 12.5.7 Verify Prerequisite System Conditions:

___/___

- a) NS Pumps 2A and 2B are OFF.

___/___ IV

- b) Verify CLOSED or have Operations CLOSE 2NS20A (NS Pump 2A Suction from FWST Block).

___/___ IV

- c) Place a jumper between B-6 and B-7 in 2ATC21 (716', GG58).

___/___ (SRO)

- d) If ND Pump 2A or 2B is operating, verify NS System is water solid by venting at 2ND94 to prevent inducing air into ND pump suction piping. *2NS18A 2/10/02 11:14*

___/___ (SRO)

- e) If ND Pump 2A or 2B is operating, verify NS Pump 2A has been run and Train A filled and vented since last NS draindown. This will ensure that no air is present in the NS Train to act as an accumulator, and push air/water to ND suction.

- 12.5.8 Record valve initial position: _____.

___/___ IV

- 12.5.9 If required, have Operations CLOSE 2NS18A.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME (1) McGuire Nuclear Station, Unit 2	DOCKET NUMBER (2) 0 5 0 0 0 3 7 0	LER NUMBER (3)			PAGE (3)	
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	1 2	OF 1 2
		8 9	0 1 0	0 0		

TEXT (if more space is required, use additional NRC Form 306a's) (1/2)

NS Heat Exchanger Cover Joint
No Scale

