NRC FORM 366 U.S. NUCLEAR REGULATORY COMMISSION

LICENSEE EVENT REPORT (LER)

APPROVED OMB NO. 3150-0104
EXPIRES:

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (P-530), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
Nine Mile Point Unit 2	05000410	1 OF 6

TITLE (4)
Inoperability of Standby Liquid Control System Due to Mispositioned Valve

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)
09	11	98	98	025	00	10	12	98	N/A	
									N/A	

OPERATING MODE (9): 1

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: *(Check one or more of the following)* (11

POWER LEVEL (10): 100

- ☐ 20.2201(b)
- ☐ 20.2203(a)(1)
- ☐ 20.2203(a)(2)(i)
- ☐ 20.2203(a)(2)(ii)
- ☐ 20.2203(a)(2)(iii)
- ☐ 20.2203(a)(2)(iv)
- ☐ 20.2203(a)(2)(v)
- ☐ 20.2203(a)(3)(i)
- ☐ 20.2203(a)(3)(ii)
- ☐ 20.2203(a)(4)
- ☐ 50.36(c)(1)
- ☐ 50.36(c)(2)
- ☒ 50.73(a)(2)(i)
- ☐ 50.73(a)(2)(ii)
- ☐ 50.73(a)(2)(iii)
- ☐ 50.73(a)(2)(iv)
- ☐ 50.73(a)(2)(v)
- ☐ 50.73(a)(2)(vii)
- ☐ 50.73(a)(2)(viii)
- ☐ 50.73(a)(2)(x)
- ☐ 73.71
- ☐ OTHER *(Specify in Abstract below and in Text, NRC Form 366A)*

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER
D. Bosnic, Operations Manager - NMP2	(315) 349-7952

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFAC-TURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANUFAC-TURER	REPORTABLE TO EPIX
				Y					

SUPPLEMENTAL REPORT EXPECTED (14)		EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
☐ YES *(If yes, complete EXPECTED SUBMISSION DATE)*	☒ NO				

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

On September 11, 1998, while performing surveillance testing on the Division I Standby Liquid Control (SLS) System, operators discovered the manual suction isolation valve to the Division II SLS pump (2SLS*P1B) out of position in the closed position. This resulted in Division II SLS being inoperable. Since Division I SLS was already inoperable due to surveillance testing, the SSS entered the appropriate Limiting Condition for Operation (LCO) for both Divisions of SLS being inoperable. The operations crew took action to place the valve in the correct position in order to restore Division II and exited the shutdown LCO.

Two probable causes were identified. The first deals with poor work practices as a result of the operator not properly positioning the valve. The second involves poor managerial methods, where personnel exhibited insufficient awareness of the impact of their actions. When an abnormal valve position indication was encountered, by operators, they did not promptly identify the deficiency to supervision so that it could be corrected. Additionally, the independent verification performed did not identify the mispositioned valve.

A complete valve lineup was performed on the SLS System and other selected safety systems. The valve indicator was adjusted. This event will be reviewed with appropriate personnel. Expectations regarding valve position verification will be enhanced.

I. DESCRIPTION OF EVENT

On September 11, 1998, while performing surveillance testing on the Division I Standby Liquid Control (SLS) System, operators discovered the manual suction isolation valve (2SLS*V46) to the Division II SLS pump (2SLS*P1B) out of position in the closed position. This resulted in Division II SLS being inoperable. Since Division I SLS was inoperable due to surveillance testing, the SSS entered an eight hour shutdown Limiting Condition for Operation (LCO) for both Divisions of SLS inoperable. The operations crew took action to place the valve in the correct position and exited the shutdown LCO.

Although operators did not manipulate the Division II manual suction isolation valve during the quarterly Division I test, they verified valve position during the restoration valve lineup. It was during this lineup verification that the valve was found in the locked closed position.

Operations personnel conducted an investigation to determine when the valve was mispositioned. They reviewed work orders, surveillance procedures, tagouts, operations logs, and training records. Discussions with work planning and security personnel, as well as the system engineer were also held.

The investigation determined that the last known time that 2SLS*V46 had been manipulated was on August 27, 1998. On that date, surveillance procedures N2-OSP-SLS-Q001 and N2-OSP-SLS-Q002 were performed for Division II SLS. Both of these procedures involved the same sequence of operations for this valve - unlocking, closing, reopening, reapplying the lock, and independently verifying the valve position.

During the sequence of testing for N2-OSP-SLS-Q001 and N2-OSP-SLS-Q002, operators manipulated 2SLS*V46 four times. Based on discussions with the operator involved, it was most likely that the positioning error occurred during either the second or third stroke of the valve in this series.

During the final stroke of the valve, the operator believes that he was positioned behind the valve, and as a result, may have operated the hand crank in the opposite direction. It was also possible that he may have only applied the hand crank lock during one of these valve strokes and failed to actually reposition the valve. As a result, it was probable that the final valve stroke actually positioned the valve to the closed position, versus the required open position.

At the conclusion of these two tests, the valve was independently verified in the locked open position. The valve indicator (located on the top of the actuator) rotates 90 degrees with the valve as it is being operated. The hand crank to operate the valve is located on the side of the actuator. In this arrangement for a valve of this type, the indicator would align itself with the pipe/process flow when the valve is open and would be 90 degrees to the pipe/process flow when the valve is closed. The independent verifier questioned the operator who actually positioned the valve because the indicator was not completely aligned with the pipe (appeared closer to 45 degrees). The operator felt that the valve might not be completely open. At that point, he was assured by the operator who had just opened it, that it was in fact open and that the position indicator was not

I. DESCRIPTION OF EVENT (Cont'd)

accurate. The independent verifier attempted to operate the valve by moving the actuator in the closed direction (but did not unlock it), saw slight motion of the indicator, and was satisfied that the valve was open.

Security personnel were also contacted to attempt to determine whether the valve may have been intentionally closed. Security personnel concluded, based on the evidence available, that the valve had been unintentionally closed.

II. CAUSE OF EVENT

Two probable causes were identified for this event.

The first cause was poor work practices as a result of the operator not properly positioning the valve. During the required surveillance testing, 2SLS*V46 should have been operated four times. As described Section I above, it was most likely that the positioning error occurred during the valve operations. In spite of the fact that the valve position indicator was out of adjustment, proper valve operation/self-checking techniques should have prevented this event.

The second cause was poor managerial methods (that is, communications of organizational values and expectations).

a. Personnel exhibited insufficient awareness of the impact of their actions. The position indicator on the valve was not properly adjusted to provide accurate valve position indication creating an error-likely situation. The indicator was 30-45 degrees out of alignment. When this abnormal position indication condition was first encountered, supervision should have been notified and action initiated to correct this condition. It was probable that this condition had existed for some time. The repeated acceptance of this inadequate equipment condition by Operations was indicative of a less-than-adequate sensitivity to minor problems and their potential effect on nuclear safety.

b. The independent verification performed did not identify the valve misposition which is also attributable to poor management methods. Management expectations relative to the requirements for being independent and for verification of locked valves were not communicated and/or understood.

III. ANALYSIS OF EVENT

This event is reportable in accordance with 10CFR50.73(a)(2)(i)(B), "Any operation or condition prohibited by the plant's Technical Specifications." Division II SLS was inoperable as a result of 2SLS*V46 being

III. ANALYSIS OF EVENT (Cont'd)

closed from August 27, 1998 to September 11, 1998, which exceeded the TS allowed outage time of seven days for one SLS train inoperable without the plant being shutdown.

The SLS is a backup system to the Control Rod Drive System (RDS), and is capable of shutting down the reactor from full power by the injection of a neutron absorber solution (boron) into the reactor vessel. Initiation of SLS may be accomplished either manually from the control room, or automatically upon receipt of a Redundant Reactivity Control System (RRCS).initiation signal. Upon receipt of a RRCS initiation signal, a 98 second time delay is initiated prior to activation of the SLS logic. The SLS System is designed to mitigate the consequences of an Anticipated Transient Without Scram (ATWS) event and not for a Design Basis Accident (DBA). Therefore, the system is not designed to meet the more stringent requirements of Emergency Core Cooling Systems (ECCS).

If SLS had been automatically initiated, during the period from August 27, 1998 to September 11, 1998, a normally open manual cross-connect valve on the suction of the SLS pumps would have allowed flow of borated water through the Division II pump, even with its manual suction isolation valve closed. An Engineering calculation has been performed which demonstrated that adequate net positive suction head would be present at both pump inlets and that the required flow rate would have been supplied by both pumps. Therefore, during the period when the Division I SLS System was available, both Division I and Division II SLS pumps would have functioned as designed without considering a failure of the Division I pump suction valve to open.

NMPC has evaluated the Core Damage Frequency (CDF) for the period that the valve was mispositioned, assuming that the Division I pump suction valve fails. The results of that evaluation is that the peak CDF was increased from 4.97 E-05 to 9.73 E-05 for several hours. This evaluation was retrospective taking into consideration other systems which were out of service. NMPC's goal for on line maintenance is to remain below 5.0 E-05. The goal was exceeded for approximately 24 hours, but the exceedance was not significant from a risk perspective.

If an automatic initiation of SLS by RRCS had occurred during the Division I surveillance testing while Division II was misaligned, SLS would not have automatically injected boron into the reactor vessel. During the performance of the Division I surveillance test, personnel were stationed locally and were in communication with personnel stationed at the SLS control panel in the control room. In the event a reactor scram had occurred during testing, and the Reactor Protection System (RPS) and the Alternate Rod Insertion (ARI) shutdown functions had not adequately shut down the reactor, the time delay interval (98 seconds) established prior to SLS initiating would have provided operators time to terminate testing and initiate actions to restore the inoperable SLS train to a normal injection lineup. Although it cannot be assured that the lineup would have been restored to normal within the 98 second time delay interval, realignment of Division I could have been achieved in a short time frame. The probability of SLS being required to provide reactivity control concurrent with the period of time that Division I was aligned for surveillance testing was very small. Division I SLS was being tested for less than 2.5 hours when the mispositioned valve was discovered.

III. ANALYSIS OF EVENT (Cont'd)

Based on the above, this condition did not pose a threat to the health and safety of the public or plant personnel.

IV. CORRECTIVE ACTIONS

1. Division II SLS was declared inoperable, and the appropriate TS LCO was entered. The manual suction isolation valve was opened and the LCO was exited.

2. Operations performed a complete valve lineup on the SLS, as well as valve lineup verifications on other selected safety systems. Valve lineups were also performed on selected safety systems at Nine Mile Point Unit 1. No other valves were found out of position.

3. The valve position indicator was restored to proper indication.

4. Remediation will be completed for the individuals involved in the surveillance testing by November 1, 1998.

5. As an interim measure to raise operator understanding of the lessons learned from this event, discussions were held with the five Operations shift crews regarding the significance of this event.

6. This event will be reviewed with Operations personnel by November 30, 1998. Operations Management will communicate expectations regarding the issues that contributed to this event, including:

   - identifying problems and not accepting degraded equipment or conditions (raising sensitivity to minor problems and their timely corrections, and their potential effect on nuclear safety)
   - stopping work when problems arise and notifying supervision of all off-normal conditions
   - expectations on valve position verifications (emphasis on locked valves)

7. Enhancement will be made to the appropriate Operations procedures to clarify expectations for valve positioning and verification. This will be completed by October 22, 1998.

8. By December 15, 1998, other branch managers will discuss this event, the lessons to be learned and management expectations as those pertain to the individual functions performed in the branch.

V. ADDITIONAL INFORMATION

A. Failed components: None

B. Previous similar events: A voluntary LER (91-15) was submitted on December 31, 1991, and discussed a procedural inadequacy which could have rendered both SLS Divisions inoperable for a brief period of time. Inadequate procedure development was the root cause of that event, and as such, actions taken would not have prevented this event.

There have been other valve mispositioning events that were not related to SLS. Those events were evaluated by NMPC prior to the SLS mispositioning. As a result, an adverse trend DER had been initiated. The SLS mispositioning will be included in the disposition of that DER. After determination of broader or generic underlying cause(s) of these events, corrective actions will be taken to prevent recurrences.

C. Identification of components referred to in this LER:

COMPONENT	IEEE 803 FUNCTION	IEEE 805 SYSTEM ID
Standby Liquid Control System	N/A	BR
Control Rod Drive System	N/A	AA
Pump	P	BR
Tank	TK	BR
Isolation Valve	ISV	BR