

LICENSEE EVENT REPORT (LER)

(See reverse for required number of digits/characters for each block)

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS MANDATORY INFORMATION COLLECTION REQUEST: 50.0 HRS. REPORTED LESSONS LEARNED ARE INCORPORATED INTO THE LICENSING PROCESS AND FED BACK TO INDUSTRY FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (7-6 F33), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1)

North Anna Power Station, Unit 1

DOCKET NUMBER (2)

05000338

PAGE (3)

1 OF 4

TITLE (4)

SAFETY VALVE SETPOINTS OUT OF TOLERANCE DUE TO SETPOINT VARIANCE

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 NAME	DOCUMENT NUMBER
05	15	97	97	002	00	06	12	97	FACILITY NAME	05000
OPERATING MODE (9)		6	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)							
POWER LEVEL (10)		0	20.2201(b)		20.2203(a)(2)(v)		X		50.73(a)(2)(i)	50.73(a)(2)(viii)
			20.2203(a)(1)		20.2203(a)(3)(i)				50.73(a)(2)(ii)	50.73(a)(2)(x)
			20.2203(a)(2)(i)		20.2203(a)(3)(ii)				50.73(a)(2)(iii)	73.71
			20.2203(a)(2)(ii)		20.2203(a)(4)				50.73(a)(2)(iv)	OTHER
			20.2203(a)(2)(iii)		50.36(c)(1)				50.73(a)(2)(v)	Specify in Abstract below
			20.2203(a)(2)(iv)		50.36(c)(2)				50.73(a)(2)(vii)	or in NRC Form 366A

LICENSEE CONTACT FOR THIS LER (12)

NAME

W. R. Matthews, Station Manager

TELEPHONE NUMBER (Include Area Code)

(540) 894-2101

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
X	SB	RV	C710	Y					
X	AB	RV	D243	Y					

SUPPLEMENTAL REPORT EXPECTED (14)

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

ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) (16)

On May 15, 1997, with Unit 1 in Mode 6, Refueling, the "as found" set pressure for one Main Steam Safety Valve (MSSV) was found to be outside the setpoint tolerance allowed by the Technical Specifications (TS). During subsequent testing the "as found" set pressures for three additional MSSVs were found to be outside the setpoint tolerance allowed by the TS. The remaining eleven MSSVs tested satisfactorily. Additionally, on May 18, 1997, the "as found" set pressure for one Pressurizer Safety Valve (PSV) was found to be outside the setpoint tolerance allowed by the TS. Although the two remaining PSVs tested satisfactorily, the average of the three PSVs was also found to be outside the TS limit. These events are reportable pursuant to 10CFR50.73 (a)(2)(i)(B) for a condition prohibited by TS.

The cause of the event is attributed to setpoint variance from what appears to be aging where valves remain in service for extended periods. This event posed no significant safety implications because the safety valves would have performed their safety function in the event of an overpressure condition. Therefore, the health and safety of the public were not affected at any time during this event.

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		YEAR 97	SEQUENTIAL NUMBER 002	REVISION NUMBER 00	

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

1.0 Description of the Event

Technical Specification 3.7.1.1 requires the Main Steam Safety Valves (MSSV)(EIS system SB, Component RV) to be operable with lift settings as specified in Table 3.7-2. The MSSVs "B" and "C" valve banks were shipped for testing of their respective "as found" lift pressure settings. The "B" valve bank was identified as the primary test group with "C" valve bank as a back-up. On May 15, 1997, Main Steam Safety Valve 104B actuated at 1209 psig which is greater than the required "as found" lift set pressure of 1120 psig, plus or minus 3 percent. On May 17, 1997, Main Steam Safety Valve 101B actuated at 1147 psig which is greater than the required "as found" lift set pressure of 1085 psig, plus or minus 3 percent. The remaining three "B" bank valves tested satisfactorily.

As a result of two failures in the original test group, four valves in the "C" bank were tested. On May 19, 1997, Main Steam Safety Valve 101C actuated at 1172 psig which is greater than the required "as found" lift set pressure of 1085 psig, plus or minus 3 percent. On May 20, 1997, Main Steam Safety Valve 103C actuated at 1145 psig which is greater than the required "as found" lift set pressure of 1110 psig, plus or minus 3 percent. Two other "C" bank valves were tested satisfactorily. As a result of the two failures in the "C" valve bank, the fifth "C" bank valve and the five valves for the "A" bank were tested. All six valves tested had "as found" lift settings within TS limits.

The pressurizer safety valves (EIS system AB, Component RV) were also tested as required by the Technical Specification 3.4.2 and 3.4.3.1 for their respective "as found" lift pressure settings. All three PSVs are tested each refueling outage. On May 18, 1997, Pressurizer Safety Valve (PSV) 1551A actuated at 2622 psig which is greater than the required lift set pressure of 2485 psig, plus or minus 3 percent. The remaining two pressurizer safety valves, PSV 1551B and 1551C, actuated at 2488 and 2557 psig, respectively, which is within the individual TS limit. However, the average "as found" lift setpoint, 2555.7 psig, was greater than the TS required lift set pressure of 2485 psig, plus 2 percent or minus 3 percent.

2.0 Significant Safety Consequences and Implications

These events posed no significant safety implications since the deviations in the "as found" lift setpoints for the MSSVs and PSVs would not have subjected the plant to any over pressure condition more adverse than those previously evaluated in the licensing analysis.

To evaluate the impact of the "as found" lift setpoints on system pressure, the limiting transient for overpressurization (i.e., the loss of electrical load event) was rerun with all the valves modeled with their "as found" lift setpoints. In the one-loop model used for the analysis, the highest MSSV "as found" lift of the three loops in each range was selected as

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2.0 Significant Safety Consequences and Implications (continued)

input to conservatively model MSSV behavior. The tolerances and setpoints in the model were all adjusted so that the PSVs and MSSVs lift at their respective "as found" lift setpoint.

The results of the evaluation indicate there is adequate margin in peak pressure even without the highest PSV "as found" lift, 2622 psig, and MSSV, 1209 psig, not lifting. Peak RCS pressure is 2673 psig with a margin of 62 psi to 110 percent of design pressure, and peak steam generator pressure is 1167 psig, with a margin of 27 psi to 110 percent of design. These peak pressure values are also bounded by the results of the analysis of record.

Since the failed valves have been disassembled, inspected, repaired as necessary, and tested satisfactorily, there is no effect on current operability. The health and safety of the public were not affected at any time during these events.

This event is reportable pursuant to 10CFR50.73 (a)(2)(i)(B) for conditions prohibited by TS 3.4.2, 3.4.3.1, and 3.7.1.1.

3.0 Cause of the Event

The cause of the event is attributed to setpoint variance as defined in the Nuclear Maintenance Applications Center (NMAC) Safety and Relief Valve Testing and Maintenance Guide, TR-105872. Lifting at higher than allowable pressure is the leading failure mode for safety valves. Typically in these cases the valves do not initially lift until a higher pressure is applied, then will actuate at lower pressure on subsequent tests as was the case with the safety valve failures.

The setpoint variance may be due to aging where valves remain in service for extended periods of time with little or no preventive maintenance performed. One third of the MSSVs are tested each refueling cycle with only those that fail being disassembled and inspected. As a result the valves that test satisfactory stay in service for extended periods without maintenance, thus becoming candidates for aging related failures. Safety valves not lifting within the prescribed pressure range during testing is a common industry occurrence.

4.0 Immediate Corrective Actions

The MSSVs that failed were disassembled, inspected, repaired as necessary (e.g. jacking and lapping), reassembled, and tested satisfactorily.

The PSV that failed was disassembled, inspected, repaired as necessary (e.g. lapped), reassembled, and tested satisfactorily.

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5.0 Additional Corrective Actions

Three additional MSSVs from "C" bank were also disassembled, inspected, repaired as necessary, and tested with no discrepancies noted.

One additional PSV was disassembled, inspected, repaired as necessary (e.g. lapped), and tested with no discrepancies noted.

6.0 Actions to Prevent Recurrence

An evaluation will be performed to review the preventive maintenance frequency of disassembly, inspection and testing. Results of the evaluation will be reviewed and implemented as necessary.

7.0 Similar Events

Previous events where MSSVs have been outside the requirements of TS for Unit 1 were included in the following LERs: N1-80-009, N1-87-009-01, N1-91-002-00, N1-93-002-00, N1-96-001-00.

Previous events where PSVs have been outside the requirements of TS for Unit 1 were included in the following LERs: N1-80-040, N1-87-008, N1-92-002, N1-93-002, N1-94-006, and N1-96-001.

8.0 Additional Information

During this period Unit 2 was operating at 100 percent power and was not affected by this event.

NAPS LER N1-97-002-00

I. VERIFICATION OF ACCURACY

1. Station Deviation Report N-97-1285, dated May 15, 1997, 1-MS-SV-104B.
2. Station Deviation Report N-97-1329, dated May 17, 1997, 1-MS-SV-101B.
3. Station Deviation Report N-97-1357, dated May 18, 1997, 1-RC-SV-1551A.
4. Station Deviation Report N-97-1364, dated May 18, 1997, 1-MS-SV-101C.
5. Station Deviation Report N-97-1389, dated May 20, 1997, 1-MS-SV-103C.
6. Station Deviation Report N-97-1412, dated May 21, 1997, 1-RC-SV-1551A, 1551B, 1551C.
7. Technical Specification 3.7.1.1, Turbine Cycle Safety Valves.
8. Technical Specification 3.4.2, RCS SV - Shutdown.
9. Technical Specification 3.4.3.1, RCS SV & RV - Operating.
10. 1-PT-50, Pressurizer Code Safety Valve Setpoint Verification.
11. 1-PT-70, Main Steam Code Safety Valve Setpoint Verification, "B" & "C" Valve Banks.
12. 1-PT-70, Main Steam Code Safety Valve Setpoint Verification, "A" Valve Bank.
13. Engineering Transmittal, ET No. NAF-970169 Rev. 0, PSV/MSSV As-Found Lift Setpoint Deviations North Anna Power Station Unit 1.

II. ACTION PLAN

1. Evaluate the preventive maintenance frequency for the MSSV regarding disassembly, inspection and retesting. Initiate corrective actions as necessary.

Responsibility: Engineering

CTS No. 02-97-0202

Due Date: _____

2. Develop a PM to teardown, inspect, and retest the PSVs every 36 months regardless of the results from PSV testing.

Responsibility: Outage & Planning

CTS No. 02-97-0202

Due Date: _____

III. COMMITMENTS (STATED OR IMPLIED)

1. An evaluation will be performed to review the preventive maintenance frequency for MSSV and PSV disassembly, inspection and retesting.