

LICENSEE EVENT REPORT (LE

Facility Name (1) Dresden Nuclear Power Station, Unit 3										Docket Number (2) 0   5   0   0   0   2   4   9				Page (3) 1   of   0   4			
TITLE (4) Main Steam Safety Valve Setpoints Found Outside Technical Specifications Limits Due to Setpoint Drift																	
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   4	2   4	8   8	8   8	0   1   0	0   1	1   0	2   4	8   8	N/A		0   5   0   0   0						
OPERATING MODE (9) POWER LEVEL (10) 0   0   0			THIS REPORT IS SUBMITTED PURSUANT TO THE 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)								
			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 Joseph Welch, Technical Staff Engineer										TELEPHONE NUMBER AREA CODE 8   1   5   9   4   2   -   2   9   2   0							
COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)																	
CAUSE	SYSTEM	COMPONENT	MANUFAC-TURER	REPORTABLE TO NPRDS		CAUSE	SYSTEM	COMPONENT	MANUFAC-TURER	REPORTABLE TO NPRDS							
X	S   B	R   V	D   2   4   5	Y													
X	S   B	R   V	T   0   2   0	Y													
SUPPLEMENTAL REPORT EXPECTED (14)										Expected Submission Date (15)							
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 24, 1988 at 1200 hours with Unit 3 in the refuel mode with all fuel removed, during the performance of Dresden Maintenance Procedure (DMP) 200-3, Unit 2/3 Six Inch Safety Valve Pre-Maintenance Testing, Main Steam Safety Valve 3-203-4H (Serial Number BK 6296) opened at a pressure of 1282 psig. Subsequently on August 16, 1988 at 1000 hours with Unit 3 in the Run mode at 44% rated core thermal power while completing testing of safety valves removed during the refuel outage in accordance with DMP 200-37, Target Rock Safety/Relief Valve Maintenance, the Target Rock Safety/Relief Valve 3-203-3A (Serial Number 171) opened at a pressure of 1200 psig. Both of these setpoints were in excess of the Technical Specification 4.6.E which requires safety valve setpoints of 1260 psig and 1135 psig +/- 1% respectively. These failures were attributed to setpoint drift. The valves will be overhauled, set, and retested satisfactorily prior to reinstallation. The safety significance of this event is minimal based on an evaluation which shows that with the valves in this "as found" condition, the reactor pressure safety limit would not have been exceeded under any design basis event. The last event of this type was reported by Licensee Event Report No. 87-30 on Docket No. 050237, which involved two Main Steam Safety Valve setpoints being found outside Technical Specification limits due to mishandling and setpoint drift.

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TEXT

PLANT AND SYSTEM IDENTIFICATION:

General Electric Boiling Water Reactor - 2527 Mwt rated core thermal power. Energy Industry Identification System (EIIS) codes are identified in the text as [XX].

EVENT IDENTIFICATION:

Main Steam Safety Valve [SB] Setpoints Found Outside Technical Specification Limits Due to Setpoint Drift.

A. CONDITIONS PRIOR TO EVENT:

Unit: 3                                      Event Date: April 24, 1988                                      Event Time: 1200 hours  
 Reactor Mode: N                                      Mode Name: Refuel                                      Power Level: 0%  
 Reactor Coolant System (RCS) Pressure: 0 psig

B. DESCRIPTION OF EVENT:

At 1200 hours on April 24, 1988 with Unit 3 in refuel with all the fuel removed during the performance of Dresden Maintenance Procedure (DMP) 200-3, Unit 2/3 Six Inch Safety Valve Pre-Maintenance Testing, Main Steam [SB] Safety Valve 3-203-4H (Serial Number BK 6296) opened at a pressure of 1282 psig. Main Steam Safety Valve 3-203-4H has a design pressure setpoint of 1260 psig. The "as found" setpoint of 1282 psig was outside the +/- 1% tolerance (1247 psig - 1272 psig) required by Technical Specification 4.6.E. However, this "as found" setpoint did not exceed the Section XI ASME Performance Test Code (PTC) 25.3-1976 tolerance of plus or minus two percent (1235 psig - 1285 psig) for safety and relief valves.

A second safety valve 3-203-4E (Serial Number 6272) with a design setpoint of 1260 psig was tested and verified to open satisfactorily at 1260 psig, which met the Technical Specification 4.6.E limit of 1260 +/- 1% tolerance. The testing of these two valves fulfills the ASME Section XI Subsection IWV-3511 testing schedule. Two additional safety valves were removed to meet the Technical Specification 4.6.E requirement to replace half of the safety valves with bench tested units each refuel outage. These two additional valves were Main Steam Safety Valve 3-203-3F (Serial Number 6525) and 3-203-4G (Serial Number BK 6277).

Testing of Target Rock Safety/Relief Valve 3-203-3A was completed following startup from the refuel outage on August 16, 1988 with Unit 3 in the run mode at 44% rated core thermal power in accordance with DMP 200-37, Target Rock Safety/Relief Valve Maintenance. During this testing, Target Rock Safety/Relief Valve 3-203-3A opened at a pressure of 1200 psig. This setpoint is 5.73% above the Target Rock Safety/Relief Valve 3-203-3A design pressure safety setpoint of 1135 psig, and exceeds the Technical Specification 4.6.E safety setpoint tolerance of +/- 1% (1146 psig - 1123 psig). This "as found" setpoint was also outside of the Section XI ASME PTC 25.3-1976 tolerance of plus or minus two percent; however, no additional valves were required to be tested by the Section XI ASME document since only one Target Rock Safety/Relief Valve is installed on Unit 3.

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TEXT

C. APPARENT CAUSE OF EVENT:

The cause of the Main Steam Safety Valve 3-203-4H setpoint discrepancy has been attributed to setpoint drift. This can be caused by a change in the position of the compression screw or any contact between the shaft and the internal adjustment guide. The safety valves tested were installed during the 1983 Unit 3 refueling outage. Visual inspection of the valve revealed no apparent damage which could have occurred between its removal from the primary containment and its being tested in the test stand.

The cause of the Target Rock Safety/Relief Valve 3-203-3A setpoint discrepancy has been attributed to setpoint drift. The setpoint drift phenomenon may have occurred as a result of a movement of the adjustment nut, corrosion of the pilot valve seat, or a relaxing of the pilot valve pressure spring.

This report is being submitted in accordance with 10CFR50.73(a)(2)(i)(B), which requires the reporting of any operation or condition prohibited by the plant's Technical Specifications.

D. SAFETY ANALYSIS OF EVENT:

The safety valves are designed to relieve steam from the reactor vessel. The four Electromatic Relief Valves and the Target Rock Safety/Relief Valve are designed to automatically open prior to reactor pressure reaching the Safety Valve opening setpoints and relieve steam from the reactor vessel to the torus, thus preventing automatic lifting of the Safety Valves. These Electromatic Relief Valves and the Target Rock Relief Valve were operable and would have automatically opened if required; these valves may also be opened via control switches from the Control Room.

Based on a safety review by Advanced Nuclear Fuels Corporation, the "as found" Main Steam Safety Valve and Target Rock Safety/Relief Valve setpoints would not have allowed reactor vessel pressure to exceed the ASME maximum vessel pressure limit. The most limiting transient analysis is Main Steam Isolation Valve (MSIV) [SB] closure at full power in conjunction with a postulated failure of the MSIV 10% closure scram. This transient analysis was redone using the actual test pressures for those valves which exceeded their limits, and the maximum setpoint tolerance for the remaining valves. The Main Steam Safety Valve setpoints used are shown in Table 1.

<u>Valve</u>	<u>Quantity</u>	<u>Ideal Setpoint</u>	<u>Analysis Setpoint</u>
Target Rock Safety/Relief Valve	1	1135 psig	1200.0 psig
Safety Relief Valve	2	1240 psig	1252.6 psig
	2	1250 psig	1262.7 psig
	3	1260 psig	1272.8 psig
	1	1260 psig	1282.0 psig

TABLE 1

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TEXT										

For the ASME overpressurization analysis, the pressure in the reactor vessel is not allowed to exceed the design pressure by more than 10%. Therefore, with a design pressure 1250 psig, the maximum allowable pressure is 1375 psig. Technical Specification 1.2 reactor coolant system Safety Limit of 1345 psig (as measured by the vessel steam space pressure indicator) insures margin to 1375 psig at the lowest elevation of the reactor vessel. The result of the transient analysis shows that the maximum vessel pressure in the worst case would have been 1328 psig. For these reasons, the safety significance of this event was determined to be minimal.

**E. CORRECTIVE ACTIONS:**

All Main Steam Safety Valves and Target Rock Safety/Relief Valves removed are overhauled and tested and setpoints verified to be within one percent of the design value prior to installation. Following a previous occurrence of safety valve setpoint drift, the procedure for overhauling safety valves was substantially improved. The centering of the valve spindle has received significant attention. The tolerances for centering have been decreased and the methods for centering have been improved. Safety valve 3-203-4H had not been overhauled using the new procedure. It is believed that the new procedure will significantly reduce the possibility for setpoint drift of the safety valves in the future. The Target Rock Safety/Relief Valve will continue to be tested when removed to ensure that the installed Target Rock Safety/Relief Valve is within the +/- 1% Technical Specification limit.

**F. PREVIOUS EVENTS:**

The last previous occurrence of a Main Steam Safety Valve being outside the Technical Specification tolerance limit was reported by Licensee Event Report #87-030 on Docket #050237. The cause of that event was attributed to mishandling of the valves during transport from the drywell to the test boiler. As corrective action, the procedure for overhauling safety valves was substantially improved. Also, to prevent future recurrence of damage in transit from the drywell to the test stand, a protective guard has been fabricated to protect the stem assembly from damage; however, it is not believed that the transportation of safety valve 3-203-4H in any way affected the as found setpoint.

This is the first reportable occurrence of a Target Rock Safety/Relief Valve exceeding Technical Specification limits.

**G. COMPONENT FAILURE DATA:**

<u>Manufacturer</u>	<u>Nomenclature</u>	<u>Model Number</u>	<u>MFG Part Number</u>
Dresser Valves	Main Steam Safety Valve	3777QA	BK6296
Target Rock Corp.	Main Steam Safety/Relief Valve	67F	121

An industry-wide NPRDS search revealed four instances of main steam safety valves manufactured by Dresser Industries in excess of tolerances. Two occurrences were attributed to an inadequate procedure for setpoint calibration. A third lifted prematurely due to a missing cotter key pin. The fourth incidence was attributed to normal relaxation of the spring.

An additional NPRDS data search concerning Target Rock Safety/Relief Valves listed 79 events attributed to setpoint drift or pilot disc-to-seat corrosion.



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October 24, 1988

EDE LTR #88-740

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Document Control Desk  
Washington, D.C. 20555

Licensee Event Report #88-010-01, Docket #050249 is being submitted as required by Technical Specification 6.6, NUREG 1022 and 10 CFR 50.73(a)(2)(i)(B). This revised report is being submitted to report that upon completion of further testing as described in the original report, Target Rock Safety/Relief Valve 2-203-3A failed open within Technical Specification 4.6.E limits. An incorrect equipment identification number submitted in the original report was also corrected.

E.D. Eenigenburg  
Station Manager  
Dresden Nuclear Power Station

EDE/ade

Enclosure

cc: A. Bert Davis, Regional Administrator, Region III  
File/NRC  
File/Numerical

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