

LICENSEE EVENT REPORT (LER)

Form Rev 2.0

Facility Name (1) Dresden Nuclear Power Station, Unit 2						Docket Number (2) 0 5 10 10 10 12 13 17			Page (3) 1 of 0 4			
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Title (4) Setpoints on Main Steam Safety Valves Found Outside  
Technical Specification 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	1	2	1	8	9	8	9	0	0	2	1	4	8	9	N/A	0	5	10	10	10	1	1
															N/A	0	5	10	10	10	1	1

OPERATING MODE (9) N		THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10CFR (Check one or more of the following) (11)									
POWER LEVEL (10) 0 0 0		<input type="checkbox"/> 20.402(b)		<input type="checkbox"/> 20.405(c)		<input type="checkbox"/> 50.73(a)(2)(iv)		<input type="checkbox"/> 73.71(b)		<input type="checkbox"/> 73.71(c)	
		<input type="checkbox"/> 20.405(a)(1)(i)		<input type="checkbox"/> 50.36(c)(1)		<input type="checkbox"/> 50.73(a)(2)(v)		<input type="checkbox"/> Other (Specify in Abstract below and in Text)			
		<input type="checkbox"/> 20.405(a)(1)(ii)		<input type="checkbox"/> 50.36(c)(2)		<input type="checkbox"/> 50.73(a)(2)(vii)					
		<input type="checkbox"/> 20.405(a)(1)(iii)		<input checked="" type="checkbox"/> 50.73(a)(2)(i)		<input type="checkbox"/> 50.73(a)(2)(viii)(A)					
		<input type="checkbox"/> 20.405(a)(1)(iv)		<input type="checkbox"/> 50.73(a)(2)(ii)		<input type="checkbox"/> 50.73(a)(2)(viii)(B)					
		<input type="checkbox"/> 20.405(a)(1)(v)		<input type="checkbox"/> 50.73(a)(2)(iii)		<input type="checkbox"/> 50.73(a)(2)(x)					

LICENSEE CONTACT FOR THIS LER (12)

Name Joseph Welch, Technical Staff Engineer						Ext. 2666						TELEPHONE NUMBER AREA CODE 8 1 5 9 4 2 1 -2 19 12 10			
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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							
X	S	B	R	V							

SUPPLEMENTAL REPORT EXPECTED (14)

Yes (If yes, complete EXPECTED SUBMISSION DATE)						X		NO		Expected Submission Date (15)		Month		Day		Year	
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ABSTRACT (Limit to 1400 spaces, i.e., approximately fifteen single-space typewritten lines) (16)

On January 21, 1989 at 1700 hours with Unit 2 in the Refuel mode, during the performance of Dresden Maintenance Procedure (DMP) 200-3, Unit 2/3 Six Inch Safety Valve Pre-Maintenance Testing, main steam safety valve 2-203-4C (Serial Number BK 6304) opened at a pressure of 1232 psig. This was below the Technical Specification 4.6.E required setpoint of 1250 psig +/- 1%. Subsequently, on January 23, 1989, a second safety valve, 2-203-4A (Serial Number BK 6527), was tested and verified to open at 1260 psig which exceeded the Technical Specification 4.6.E required setpoint of 1240 psig +/- 1%. Both safety 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 safety 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 88-10-01 on Docket 050249, which involved a main steam safety valve setpoint and a main steam Target Rock safety/relief valve setpoint being found outside Technical Specification limits due to setpoint drift.

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LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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TEXT Energy Industry Identification System (EIIS) codes are identified in the text as [XX]

PLANT AND SYSTEM IDENTIFICATION:

General Electric - Boiling Water Reactor - 2527 Mwt rated core thermal power.

Nuclear Tracking System (NTS) tracking code numbers are identified in the text as (XXX-XXX-XX-XXXXX).

EVENT IDENTIFICATION:

Setpoints for Main Steam [SB] Safety Valves 2-203-4A and 2-203-4C Found Outside Allowable Technical Specification Limits Due to Setpoint Drift.

A. CONDITIONS PRIOR TO EVENT:

Unit: 2                                      Event Dates: January 21, 1988                                      Event Times: 1700 hours

Reactor Modes: N                                      Mode Names: Refuel                                      Power Levels: 0%

Reactor Coolant System (RCS) Pressures: 0 psig

B. DESCRIPTION OF EVENT:

At 1700 hours on January 21, 1989 with Unit 2 in the Refuel mode 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 2-203-4C (Serial Number BK 6304) opened at a pressure of 1232 psig. Main steam safety valve 2-203-4C has a design pressure setpoint of 1250 psig. The "as found" setpoint of 1232 psig was not within the +/- 1% tolerance (between 1237 psig and 1262 psig) required by Technical Specification 4.6.E. However, this "as found" setpoint did not exceed the American Society of Mechanical Engineers (ASME) Section XI Performance Test Code (PTC) 25.3-1976 tolerance of +/- 2% (between 1225 psig and 1275 psig) for safety and relief valves.

A second main steam safety valve, 2-203-4A (Serial Number BK 6527), with a design setpoint of 1240 psig was functionally tested on January 23, 1989 and observed to open at 1260 psig. This exceeded the Technical Specification 4.6.E limit but was within the ASME Section XI Code requirements. Two additional safety valves, 2-203-4B and 2-203-4D, were removed and functionally tested satisfactorily. Half of the safety valves were replaced with bench tested units as required by Technical Specification 4.6.E at each refueling outage. The results of all the testing are summarized below.

MAIN STEAM SAFETY VALVES TESTED	DESIGN OPENING PRESSURE	AS FOUND OPENING PRESSURE	VARIANCE FROM DESIGN (psig)	VARIANCE FROM DESIGN (%)
2-203-4A	1240 psig	1260 psig	+20 psig	+1.61% (Unsatisfactory)
2-203-4B	1260 psig	1257 psig	-3 psig	-.24% (Satisfactory)
2-203-4C	1250 psig	1232 psig	-18 psig	-1.44% (Unsatisfactory)
2-203-4D	1260 psig	1252 psig	-8 psig	-.63% (Satisfactory)

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C. APPARENT CAUSE OF EVENT:

The cause of this event 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. These particular valves were installed during the 1985 Unit 2 refueling outage. Inspection of the safety valves revealed no apparent damage which could have occurred between their removal from Primary Containment [NH] and then being tested on the test stand. 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 Technical Specifications.

D. SAFETY ANALYSIS OF EVENT:

The main steam safety valves are designed to relieve pressure 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 pressure from the reactor vessel to the torus, thereby preventing automatic lifting of the safety valves. The electromatic relief valves and the Target Rock safety/relief valve were operable and would have automatically opened if required. These valves may also be opened manually from the Control Room via control switches.

Based on a safety review performed by the Commonwealth Edison Nuclear Fuel Services Department, the "as found" safety valve setpoints would not have allowed reactor vessel pressure to exceed reload licensing limits for the previous operating cycle. This review conservatively assumed that each valve with a Technical Specification setpoint of 1240 psig had drifted to 1260 psig, causing a delay in actuation of both safety valves. The analysis also conservatively assumed that the valve that drifted low did not drift. In addition, this analysis did not take credit for operation of the relief valves, which open prior to reactor pressure reaching the safety valve opening setpoints. All remaining safety valves were assumed to lift at their design setpoint. Based on the linear behavior of the pressure rise during the overpressurization transient, this delay would result in a maximum (lower plenum) pressure of 1345 psig which is considerably less than the peak allowable ASME vessel pressure limit of 1375 psig.

For these reasons, this event was determined to be of minimal safety significance.

E. CORRECTIVE ACTIONS:

All main steam safety valves removed will be overhauled and tested and their setpoints verified within one percent of the design value. 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. The safety valves involved in this occurrence had not been overhauled using the improved procedure. Also, the previous practice of not adjusting the setpoint following overhaul if the valve opened within the one percent tolerance band is being changed such that adjustments will be made until the opening setpoints are as close to the design setpoint as reasonably achievable. The Maintenance Staff will revise DMP 200-3 in order to implement this policy (237-200-89-01301). It is believed that the improved overhaul and testing methodology will significantly reduce the possibility of future recurrence of an event of this type.

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F. PREVIOUS EVENTS:

LER/Docket Number      Title

88-010/050249      Main Steam Safety Valve 3-203-4D Setpoint Found Outside Technical Specification Limits Due to Setpoint Drift.

The cause of this event was attributed to normal setpoint drift of the safety valve. As corrective action, the valve was overhauled and tested and its setpoint set to within one percent of the design value setpoint drift prior to installation.

87-030/050237      Main Steam Safety Valve Setpoints Found Outside Technical Specification Limits Due to Mishandling and Setpoint Drift.

The cause of that event was attributed to mishandling of the safety valves during transportation from Primary Containment to the test stand. As corrective action, the procedure for overhauling safety valves was substantially improved. Also in order to prevent damage in transit from Primary Containment to the test stand, a protective guard has been fabricated to protect the stem assembly from damage; however, it was not believed that the transportation of main steam safety valve 3-203-4D affected the "as found" setpoint.

G. COMPONENT FAILURE DATA:

<u>Manufacturer</u>	<u>Nomenclature</u>	<u>Model Number</u>	<u>Serial Numbers</u>
Dresser	Main Steam Safety Valve	3777QA	BK6303, BK6527

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



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February 14, 1989

EDE LTR #89-103

U.S. Nuclear Regulatory Commission  
Document Control Desk  
Washington, D.C. 20555

Licensee Event Report #89-002-0, Docket #050237 is being submitted as required by Technical Specification 6.6, NUREG 1022 and 10 CFR 50.73(a)(2)(i)(B).

*L. J. Hermer for*

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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