

## LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) Davis-Besse Unit 1										DOCKET NUMBER (2) 0 5 0 0 0 3 4 6				PAGE (3) 1 OF 0 3											
TITLE (4) PORV Discharge Line Overstressed Due to Inadequate Heat Trace																									
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)												
1	0	0	7	8	5	8	5	0	1	9	0	0	1	1	0	6	8	5	0	5	0	0	0	0	0
OPERATING MODE (9)		THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR § (Check one or more of the following) (11)																							
5		20.402(b)				20.405(c)				50.73(a)(2)(iv)				73.71(b)											
POWER LEVEL (10)		20.405(a)(1)(i)				50.36(c)(1)				50.73(a)(2)(v)				73.71(c)											
J 0 0		20.405(a)(1)(ii)				50.36(c)(2)				50.73(a)(2)(vii)				OTHER (Specify in Abstract below and in Text, NRC Form 366A)											
		20.405(a)(1)(iii)				50.73(a)(2)(i)				50.73(a)(2)(viii)(A)															
		20.405(a)(1)(iv)				X 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)(ix)															
LICENSEE CONTACT FOR THIS LER (12)																									
NAME P. Straube										TELEPHONE NUMBER AREA CODE 4 1 9 2 4 9 - 5 1 0 1 0															
COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)																									
CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPDOS		CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPDOS															
SUPPLEMENTAL REPORT EXPECTED (14)										EXPECTED SUBMISSION DATE (15)		MONTH	DAY	YEAR											
YES (If yes, complete EXPECTED SUBMISSION DATE)										X NO															

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

The Pressurizer Power Operated Relief Valve (PORV) inlet line contains a loop seal. By design the loop seal must be maintained at 500°F to prevent a 'cold' slug of water from being discharged through the PORV and overstressing downstream piping that connects the PORV to the Reactor Coolant System Quench Tank. A review of the June 9, 1985 event showed that the loop seal temperature was only 469°F prior to the lifting of the PORV. A new analysis of piping stresses using 469°F determined that a high system loading would result on the downstream side of the valve. Analytically, the pipe was overstressed and several supports overloaded during the lifting of the PORV. Inspection of several supports in the highly loaded region of the system and examination of two field welds showed no damage in this area immediately downstream of the PORV. However, later inspections revealed evidence of high loading near the Quench Tank.

The loop seal problem will be resolved by adding a drain line upstream of the PORV. This will prevent the buildup of water in the loop seal. The change will be made under Facility Change Request (FCR) 85-160.

Also, due to evidence of high loading near the Quench Tank, several piping welds will be examined to ensure no piping damage was sustained.

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## LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

APPROVED OMB NO. 3150-0104

EXPIRES 8/31/85

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Davis-Besse Unit 1	0 5 0 0 0 3 4 6 8 5	— 0	1 9	— 0 0	0 2	OF 0 3

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

Description of Occurrence:

On February 1, 1985, Toledo Edison made a submittal (Serial No. 905) of item II.D.1 of NUREG-0737 concerning the Pressurizer Code Safety Valves and the Power Operated Relief Valve (PORV) and associated piping. The submittal included the results of a Teledyne analysis performed to evaluate a PORV blowdown with a 500°F (or higher) loop seal temperature. On June 7, 1985 (Log 1764) the NRC requested further information on this analysis. On July 19, 1985 (Serial No. 1171) Toledo Edison supplied the information to the NRC and also noted that the 500°F loop seal temperature could not be maintained. Since the original analysis done by Teledyne used 500°F, Toledo Edison decided to have it redone and reported to the NRC.

During the June 9, 1985 event, the PORV lifted three times. Since the loop seal temperature was less than 500°F a special analysis was conducted to assess the stresses on the piping as a result of the initial lifting of the PORV. The results of this PORV blowdown analysis were reported by Teledyne to Toledo Edison in a September 19, 1985 letter (No. 6388.4). The results indicated that analytically the Class 3 piping had been overstressed on the discharge side of the PORV and that several pipe supports on the discharge side had been overloaded.

On October 7, 1985 it was determined that even though this information would be reported to the NRC as a response committed to in the July 19, 1985 letter, that it should also be reported as an LER. The loop seal temperature less than 500°F and resultant overstressed discharge line is reportable under 10FR50.73 (a)(2)(B) as a condition outside the design basis.

Designation of Apparent Cause of Occurrence:

The cause of the event was the inability to maintain a 500°F loop seal with the installed heat tracing. The overstressing of the PORV discharge line is due to temperatures less than 500°F on the loop seal of the PORV inlet line. The inability to maintain the temperature is due to a heat trace application that has been very difficult to maintain.

Analysis of Occurrence:

Although analysis shows that the piping immediately downstream of the PORV was overstressed and the supports overloaded, an examination of the system in this area does not reveal any damage to the piping or supports. The analytical model for the analysis conducted, like most analysis, predicted a conservative load and, thereby, a more severe condition of blowdown loading than occurred on June 9, 1985. Due to the examination results it is assumed the loading on the system in the analytically predicted high load region was not severe enough to produce damaging effects on the piping and supports based on the quality control inspections conducted. However, due to the pipe support reinspection efforts two NCR's (85-920, 85-921) on two supports close to the Quench Tank identified support deficiencies which could have been caused by high loads in that region. The analysis which had been conducted by Teledyne did not show high analytical loads in this region.

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Corrective Action:

Corrective action planned to eliminate the high loading experienced by the system when the PORV is discharged is to install a drain line upstream of the PORV. This will keep the loop seal drained and free of accumulated water which causes the high loads during PORV discharge. This drain line will be installed under Facility Change Request FCR 85-160 prior to the end of the current outage. Also, due to the evidence of high loading near the Quench Tank, several piping welds near the Quench Tank will be non-destructively examined to assure that no piping damage in this area was sustained. NCR's 85-920 and 85-921 are required to be dispositioned and rework performed prior to unit start up. The existing heat trace will no longer be used.

Failure Data:

This is the first report of overstressing due to the inability of installed heat tracing to maintain 500°F on the loop seal.

Report No: NP-33-85-25DVR No(s): 85-158



November 6, 1985

Log No. K85-1501

File: RR 2 (NP-33-85-25)

Docket No. 50-346

License No. NPF-3

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

Gentlemen:

LER No. 85-019  
Davis-Besse Nuclear Power Station Unit 1  
Date of Occurrence: October 7, 1985

Enclosed is Licensee Event Report 85-019 which is being submitted in accordance with 10FR50.73, to provide 30 day written notification of the subject occurrence.

Yours truly,

Louis F. Storz  
Plant Manager  
Davis-Besse Nuclear Power Station

LFS/syc

Enclosure

cc: Mr. James G. Keppler,  
Regional Administrator  
USNRC Region II

Mr. Walt Rogers  
DB-1 NRC Resident Inspector

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