NRC Form 366
(9-83)

U.S. NUCLEAR REGULATORY COMMISSION
APPROVED OMB NO. 3150-0104
EXPIRES: 8/31/85

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
Davis-Besse Unit 1	0 5 0 0 0 3 4 6	1 OF 0 3

TITLE (4)

Calibration Error on Rosemount Transmitters for Steam Generator Levels

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 5 0 0 0
0 9	0 4	8 6	8 6	—	0 3 9	—	0 0	1 0	0 6	8 6		0 5 0 0 0

OPERATING MODE (9)	5	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)			
POWER LEVEL (10)	0 1 0 0	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)	X 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)(x)	

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER
	AREA CODE
Kevin Lyall/Al Topor	4 1 9 2 4 9 - 5 0 0 0

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	

SUPPLEMENTAL REPORT EXPECTED (14)		EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
X YES (If yes, complete EXPECTED SUBMISSION DATE)	NO		1 2	1 5	8 6

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

Upon review of calibration records for Steam Generator (SG) level transmitters, it was discovered on September 4, 1986 that static pressure span effects were compensated for incorrectly. This could result in providing inaccurate outputs to the Steam and Feedwater Rupture Control System cabinets and delayed actuation of SG low level trip setpoints.

Startup SG level transmitters are affected resulting in inoperable channels. The actual zero shift and span shift correction factor shall be used to recalibrate the transmitters prior to restart.

This report is being submitted per 10CFR 50.73(a)(2)(ii) and 10CFR50.73(a)(2)(vii).

☆ U.S.GPO:1984-0-454-481/18759

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Davis-Besse Unit 1	0 5 0 0 0 3 4 6	8 6	— 0 3 9	— 0 0	0 2 OF 0 3

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

Description of Occurrence:

An evaluation of Steam Generator (SG) level I&C data package calibration records was performed. A conclusion was reached on September 4, 1986 while the plant was in Mode 5 (Cold Shutdown) that the calibration techniques used for compensation of static pressure span effects was performed incorrectly. The calibration problem has existed since 1982. All Rosemount differential pressure transmitter I&C data packages were reviewed. The only transmitters that rendered equipment inoperable were the SG level transmitters that feed the Steam and Feedwater Rupture Control System (SFRCS) low level trip setpoints. It was determined that the correction factor was being applied in the direction opposite from that recommended by Rosemount. This results in the level transmitter outputs indicating that the SG water level is higher by 7.2 inches than actual at low water levels.

The trip setpoints on low SG level did not contain sufficient margin to bound the subject error, and therefore, the Technical Specification limits on low SG level may have been exceeded.

The calibration error affects all four channels in the Steam Generator Level Instrumentation cabinets rendering the transmitters inoperable.

The plant at the time of discovery was in Mode 5, zero percent reactor power on an extended outage. This report is being submitted per 10CFR50.73(a)(2)(ii) and 10CFR50.73(a)(2)(vii).

Designation of Apparent Cause of Occurrence:

The cause for this channel inoperability is calibration error due to a deficient procedure and inadequate review of that procedure. The procedure for calibration of the static pressure span shift correction was provided by the Rosemount instruction manual; however, it was applied incorrectly by utility personnel.

The error resulted in level transmitters that indicate the level is higher than it actually is at low levels. The amount of the span error decreases linearly to zero on rising level.

Analysis of Occurrence:

The subject level transmitters were calibrated at ambient static pressure utilizing incorrect static pressure span shift correction factors. Returning the transmitters to service at high line pressures enabled the channels to have twice the original static pressure span shift error.

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Davis-Besse Unit 1	0 5 0 0 0 3 4 6	8 6	— 0 3 9	— 0 0	0 3 OF 0 3

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

During a loss of feedwater event, and subsequent falling SG level, the SFRCS trip setpoint will actuate below Technical Specification limits specified in the Limiting Conditions for Operation as a result of this calibration error.

There is no diverse backup to SFRCS low level SG trip signals and since the error is a common mode error, the analysis would have to be based upon a trip at 100% power with the coincident delay in starting of the auxiliary feedwater pumps.

An evaluation of the full effect this would have on the plant is being made. The results of this evaluation will be reported in the revision to this report in December 1986.

Corrective Action:

Upon discovery of the problem engineering initiated an investigation of all Rosemount differential transmitters installed in systems with high static pressure.

The investigation has determined that the only instrument channels required to be declared inoperable by this calibration problem are the SG startup range transmitters.

Maintenance Work Orders 7-86-3309 were initiated to determine the exact zero shift of each SG transmitter by October 30, 1986. A procedure has been generated for this determination, IC 2702.52, which will identify the value of the zero shift.

The static pressure span shift correction factors will be recalculated to ensure the calibration package correctly addresses the span shift and verified by December 1986.

The static pressure span shift and zero shift will both be provided in the I&C data packages that require revision by December 1986.

Procedures are now prepared and reviewed under AD 1805.00, Procedure preparation, Review, Approval and Revision. In this procedure specific guidance is given for the preparation and review of procedures. Use of this program should eliminate this type of occurrence.

Failure Data:

Since 10CFR50.73 took effect there have been three instances where vendor recommendations have not been incorporated into procedures; see LERs 86-10, 86-11, and 86-21.

REPORT NO: NP-33-86-48

PCAQ NO(s): 86-336

TOLEDO EDISON

October 6, 1986

Log No: KA86-0262
File: (NP-33-86-48)

Docket No. 50-346
License No. NPF-3

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

Gentlemen:

LER No. 86-039
Davis-Besse Nuclear Power Station Unit No. 1
Date of Occurrence September 4, 1986

Enclosed is Licensee Event Report 86-039 which is being submitted in accordance with 10CFR50.73, to provide 30 day written notification of the subject occurrence.

Yours truly,

Louis F. Storz

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

LFS/ed

Enclosure

cc: Mr. James G. Keppler
Regional Administrator
USNRC Region III

Mr. Paul Byron
DB-1 NRC Resident Inspector

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