NRC Form 366
(9-83)

U.S. NUCLEAR REGULATORY COMMISSION
APPROVED OMB NO. 3150-0104
EXPIRES: 8/31/88

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 4

TITLE (4)
Fire Damper Installation Deficiencies Voiding UL Rating

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 9	8 6	8 6		0 1 0	0 0	0 3	0 6	8 6		0 5 0 0 0
											0 5 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)	0 0 0	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)	X OTHER (Specify in Abstract below and in Text, NRC Form 366A) Special Report
		20.405(a)(1)(iii)	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	TELEPHONE NUMBER
	AREA CODE
Jeff S. Haverly, Fire Protection Compliance Supervisor	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		0 6	3 0	8 6

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

On January 21, 1986 an informal walkdown of a sample 21 fire dampers was performed to assess the adequacy of the installations against the manufacturers recommendations. In each case installation problems affected the thermal expansion of the damper. In most instances the thermal expansion space was filled with either silicone foam or grout and in other instances the damper was not properly attached to the sleeve in the fire barrier. With this rate of failure for a sample 21, it was decided to declare all Technical Specification fire dampers inoperable and initiate the appropriate fire watches.

Toledo Edison is developing a plan to verify that the installation of all fire dampers is in accordance with manufacturers recommendations and is supported by the appropriate test documentations. A phased implementation plan to resolve the fire damper installation concerns is being developed and will be initiated by April 1, 1986.

This event is being reported as a Special Report per Technical Specification 6.9.2 since the fire barrier penetrations were not restored to operable within seven days.

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FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
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TEXT (If more space is required, use additional NRC Form 366A's) (17)

Description of Occurrence:
On January 21, 1986 an informal walkdown of fire damper installations was performed to assess the adequacy of the installations against the manufacturers recommendations. To support the fire damper-fire barrier rating as assigned by Underwriters Laboratories, dampers must be installed to manufacturers recommendations which are supported by test data justifying the assigned fire barrier ratings. A sampling of 21 fire damper assemblies were inspected. Installation deficiencies were identified for each inspected damper as follows:

FD 1147
FD 1132 Assembly was grouted or silicone foamed in place. (Damper too high off of floor to tell which) with improper retaining angles. Could not check internal construction.

FD 1034 Assembly grouted in place with improper retaining angles and sleeve. Damper was only attached to sleeve on one face instead of both.

FD 1121
FD 1117
FD 1120 Masonary opening oversized, thermal expansion space filled with silicone foam, improper retaining angles. Could not check internal construction.
FD 1115
FD 1059
FD 1070
FD 1057
FD 1046
FD 1047
FD 1043
FD 1114

FD 1050 Thermal expansion space filled with silicone foam. Half the individual dampers in this horizontal multiple assembly were oriented incorrectly. (Blade packages are supposed to be along the perimeter of the assembly.) Only half of the individual dampers were installed in this manner. Dampers appeared to be attached to the sleeve on only one face.

FD 1056
FD 1155 U-channel retaining angles bolted to fire barrier face and also welded to damper sleeve which will prevent thermal expansion. Thermal expansion space or internal construction could not be checked.

FD 1045 Assembly was grouted in place, no retaining angles. Could not check internal construction.

FD 1049
FD 1042 Assembly was grouted in place, improper retaining angles. Could not check internal construction.

FD 1044 Masonary opening oversized, thermal expansion space filled with silicone foam, improper retaining angles, conduit run through thermal expansion space. Could not check internal construction.

Designation of Apparent Cause of Occurrence: The apparent cause of the damper installation deficiencies was the lack of adequate guidance in the fire damper installation documents to ensure adequate installation.

Analysis of Occurrence: Fire damper operability through periodic surveillance testing is maintained, however, the types of installation deficiencies necessitate the questioning of damper operability in the event of a design basis fire of the magnitude utilized in fire damper testing. The types of problems and their potential impact on damper operability in the event of a fire are as follows:

- Thermal expansion space between the damper sleeve and fire barrier filled with either concrete grout or silicone foam which will resist thermal expansion of the assembly during a fire condition. Binding and failure to close or failure of damper blade joints may occur.

- Absence of proper damper sleeve with retaining angles to prevent assembly from being pulled out from the fire barrier. A fire may cause certain duct supports or piping/conduit failure causing duct work to collapse. Duct work must be able to break away from the damper package or be rigidly constructed to prevent such an occurrence.

- Rigid attachments between fire damper sleeve retaining angles and fire barriers which will prevent thermal expansion of the assembly. Fire damper expansion without package expansion may cause binding and failure to close or failure of damper blade joints.

- Missing attachments between fire damper and sleeve which can allow assembly to distort in a fire condition. Binding or twisting of assembly may occur.

Improper installation of fire dampers seriously degrades the ability of the fire damper to perform its limited fire resistance function; i.e., block line-of-sight flame paths through a fire barrier HVAC penetration. Fire barrier penetrations equipped with fire dampers represents a small surface area when compaired with the gross area of the fire barriers. The failure of the fire damper would not impact the structural integrity or fire resistance capability (both blocking line-of-sight flame paths and preventing heat transfer) of the balance of the fire barrier in which the damper is installed.

Approximately two-thirds of the fire dampers installed in the plant have steel duct work attached to the fire dampers. Steel ductwork is normally credited with a nominal one hour fire resistance rating. The majority of the HVAC systems are designed for automatic air flow shutdown via smoke and high temperature detectors located at supply and return fans. This would reduce the potential for flame propagation through HVAC fire barrier penetrations.

The existing fire protection program is designed to limit combustible loading throughout the plant by administrative control of transient combustibles and by design through blanketing of cable trays with kaowool fire resistant materials. This reduces combustible paths for fire propagation. The fire protection program also provides early warning and suppression of fires through automatic fire detections and suppression systems, manual fire fighting hose station network, roving fire watches and 24 hour

a day manned training fire brigade with auxiliary support from the county fire department.

With the limited number and small physical size of fire dampers anticipated to be involved in a single fire occurance, manned fire fighting exposure coverage can be deployed to prevent fire propagation to adjoining areas should any attached duct work or air flow through the opening fail to do so.

Corrective Action: Roving fire watches were initiated on January 29, 1986 to inspect all fire dampers as required by Technical Specification 3.7.10.

Investigation of the 179 existing fire damper tag numbers is nearly completed. At this time 140 fire dampers have been identified as having some installation deficiencies. and will potentially require modification/replacement.

A phased implementation plan for the evaluation of the inspection results, prioritization of fire damper modifications, issuance of installation procedures, training on the installation procedures and the implementation and acceptance testing of fire dampers will be initiated by April 1, 1986. Toledo Edison will provide a revision to this LER by May 30, 1986 to discuss the final inpsection results and provide definitive schedules for completing the fire damper modification effort.

Failure Data: Previous fire damper problems were reported in NP-33-84-21 (LER 84-20) NP-33-83-64 (LER 83-46) and NP-33-83-50 (LER 83-41).

REPORT NO: NP-33-86-07

DVR(s): 86-019

TOLEDO EDISON

March 6, 1986

Log No. KA86-79
File: RR 2 (NP-33-86-07)

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

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

Gentlemen:

LER No. 86-010
Davis-Besse Nuclear Power Station Unit 1
Date of Occurrence: January 29, 1986

Enclosed is Licensee Event Report 86-010 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
Daivs-Besse Nuclear Power Station

LFS/syc

Enclosure

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

Mr. Walt Rogers
DB-1 NRC Resident Inspector

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