TOLEDO EDISON

EDISON PLAZA
300 MADISON AVENUE
TOLEDO, OHIO 43652-0001

May 3, 1990

Log No.: BB90-00703
NP33-90-008

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

United States Nuclear Regulatory Commission
Document Control Desk
Washington, D. C. 20555

Gentlemen:

LER 90-007
Davis-Besse Nuclear Power Station, Unit No. 1
Date of Occurrence - April 3, 1990

Enclosed please find Licensee Event Report 90-007 which is being written to provide 30 days notification of the subject occurrence. This report is being submitted in accordance with 10CFR50.73(a)(2)(iv).

Yours truly,

Louis F. Storz

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

LFS/plf

Enclosure

cc: Mr. A. Bert Davis
Regional Administrator
USNRC Region III

Mr. Paul Byron
DB-1 NRC Sr. Resident Inspector

IE22
1/1

NRC Form 366
(9-83)

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

LICENSEE EVENT REPORT (LER)

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TITLE (4)
Inadvertent Inconsequential SFAS Actuation While Defueled

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 4	0 3	9 0	9 0	0 0 7	0 0	0 5	0 3	9 0		0 5 0 0 0

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)

OPERATING MODE (9)						
D	20.402(b)	20.405(c)	X 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)		
0 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)	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
Jan C. Stotz, Engineer - Maintenance Planning	4 1 9 3 2 1 - 7 5 4 4

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
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 3, 1990, at 2306 hours, with the reactor defueled, the station experienced an inadvertent Safety Features Actuation System (SFAS) Level 1 actuation when containment radiation monitor RE2005 spiked after being bumped by a worker in containment. On April 7, 1990, at 1031 hours, another level 1 actuation occurred when the same detector spiked. This time the cause could not be determined. Later at 1719 hours, the station experienced an SFAS Level 1 through 4 actuation when attempting to pull the containment pressure transmitter input fuses to SFAS Channel 1. Pulling input fuses to SFAS, where possible, was corrective action after the 1031 hour actuation. In each actuation, another channel of SFAS had previously been de-energized for maintenance and cleaning which caused the inadvertent trip of a single channel to become an SFAS actuation. A major contributing factor is the design of SFAS which does not allow the whole channel to be bypassed or de-energized.

Barriers were placed around all four containment radiation detectors by April 6, 1990, to help prevent inadvertent contact. RE2005 is being monitored to determine the cause of any future spikes. An evaluation will be performed to determine the best method to reduce inadvertent actuations when SFAS is not required.

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

Description of Occurrence:

On April 3, 1990, at 2306 hours, with the reactor defueled, the station experienced an inadvertent Safety Features Actuation System (SFAS-JE) Level 1 actuation when containment radiation monitor RE2005 spiked. This tripped that function in SFAS Channel 2. Prior to the actuation SFAS Channel 1 had been de-energized for maintenance and cleaning. The Level 1 actuation caused containment isolation, per design. SFAS Channel 2 was reset by 2310 hours. This event was reported to the NRC at 0003 hours on April 4, 1990, via the ENS per 10CFR50.72(b)(2)(ii) as the automatic actuation of Engineered Safety Features (ESF) equipment.

On April 7, 1990, at 1031 hours, with the reactor defueled, the station experienced another inadvertent SFAS Level 1 actuation when RE2005 spiked and tripped SFAS Channel 2. Prior to the actuation, SFAS Channel 4 had been de-energized for maintenance and cleaning. The Level 1 actuation caused containment isolation. The NRC was notified at 1340 hours via the ENS per 10CFR50.72(b)(2)(ii).

On April 7, 1990, at 1719 hours, with the reactor defueled, the station experienced an inadvertent Level 1 through 4 actuation when pulling containment pressure transmitter input fuses to SFAS Channel 1. Difficulties pulling the fuse caused a spike and a trip of this parameter in Channel 1. Prior to the actuation, SFAS Channel 4 had been de-energized for maintenance and cleaning. Pulling of this and other input fuses was part of the corrective action from the 1031 hour actuation and was intended to reduce at least some of the sources for inadvertent actuations. The NRC was notified at 1945 hours.

These events are being reported as an LER under 10CFR50.73(a)(2)(iv) as the automatic actuation of ESF equipment.

Apparent Cause of Occurrence:

The cause of the RE2005 actuation on April 3, 1990, at 2306 hours was incidental contact with the monitor in containment. This monitor is mounted to the Shield Building in the annulus during normal power operation. During refueling operations, the containment radiation monitors are relocated inside the containment vessel. With SFAS Channel 1 de-energized, the necessary logic was complete for a high containment radiation SFAS Level 1 actuation.

The cause of the RE2005 spike on April 7, 1990, at 1031 hours is not known. Since the previous bumping on April 3, 1990, protective barriers were installed around the detectors to help prevent contact. Accidental contact is not thought to be the cause for this actuation. Radiological Controls could not find any movement of radioactive material near the detector that might have set it off.

The cause of the Level 1 through 4 actuation was a high containment pressure signal that occurred when the containment pressure transmitter power fuse was being pulled. The attempt to de-energize some of these signals was part of the corrective action from the 1031 hour event.

The major contributing factor in all of these events is the design of SFAS. It does not allow the system to be shutdown without failing the output devices to their safety positions/status. The only way to avoid the actuation is to de-energize the output equipment. This is not always practical because for normal operation and for maintenance and cleaning, equipment may be needed in its normal status. Therefore, when a channel is de-energized, it takes only one more inadvertent actuation in another channel of any one of the parameters monitored by SFAS to initiate an ESF actuation.

Analysis of Occurrence:

SFAS is not required by Technical Specifications when the reactor is defueled. The inadvertent actuations did not create any significant safety concerns. It was a disruption to the outage activities.

Corrective Action:

After the bumping of RE2005 at 2306 hours on April 3, 1990, temporary barriers were built around the SFAS radiation monitors. They were in place by April 6, 1990. RE2005 is being monitored by special recorders in an attempt to pinpoint the cause of any future actuations.

After RE2005 actuated at 1031 hours on April 7, 1990, a cause could not be determined. It was decided to de-energize the input signals to the SFAS cabinets, where possible, to eliminate at least some of the potential sources of inadvertent actuations. It was while this effort was in progress that the high containment pressure actuation occurred.

An evaluation will be performed to determine if it would be cost effective to modify the SFAS design or whether other administrative amd procedural strategies can be used to minimize inadvertent actuations when SFAS is not required to be operable.

Failure Data:

The previous inadvertent SFAS actuation was reported in LER 90-006. That event was caused by accidental contact with a breaker switch (while defueled) which caused loss of power to two SFAS panels. LER 89-017 involved a failed relay in one channel that was not detected while testing in a second channel which caused a component actuation. The next previous event was reported in

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

LER 88-012 when two containment radiation monitors were tripped when radioactive material was moved past the detectors. LER 90-006 is related to the cause of at least one of the actuations in this current report.

REPORT NO.: NP33-90-008

PCAQR NO.: 90-0279, 90-0297, 90-0298