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)
South Texas, Unit 1	0 5 0 0 0 4 9 8	1 OF 0 4

TITLE (4) Loss of Sample Flow to Containment Purge Radiation Monitor Causes Containment Ventilation Isolation

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 8	2 6	8 7	8 7	0 0 2	0 2	0 6	1 3	8 8		0 5 0 0 0
										0 5 0 0 0

OPERATING MODE (9)	6	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)			
POWER LEVEL (10)	0 0 0	20.402(b)	20.405(c)	X 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)	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
Charles A. Ayala - Supervising Licensing Engineer	AREA CODE 5 1 2 — 9 7 2 - 8 6 2 8

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 August 26, 1987 at 1710 hours during initial core load, a Containment Ventilation Isolation occurred as a result of loss of sample flow to a Reactor Containment Building Purge radiation monitor. The supplementary purge system which was in operation at the time was isolated as designed. Subsequent investigation of the cause of the loss of sample flow was not conclusive. Review of operator actions in the control room, alarm logs, and attempted reproduction of the event by simulated vibration of the pump control relay which could have caused the monitor to lose sample flow revealed that the most probable root cause was unauthorized local operation of the monitor's skid-mounted controls, power or valves; or operation from the control room panel. Corrective actions to prevent recurrence include caution signs at the control room panels and monitor skids, addition of control room radiation monitor control module protective covers, training for plant personnel, disabling of control room pushbuttons which trip the sample pumps, and modification to ESF actuation logics to eliminate actuation on radiation monitor failure.

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

DESCRIPTION OF OCCURRENCE:

On August 26, 1987 at 1710 hours, with the plant in Mode 6 and during performance of the initial core loading, a Containment Ventilation Isolation (CVI) [Engineered Safety Feature (ESF)] actuation occurred. The source of the actuation was immediately identified as a loss of sample flow to the Reactor Containment Building Purge Isolation radiation monitor (RT-8012). This monitor is one of two identical Class 1E monitors which send signals to the Solid State Protection System (SSPS) to initiate Containment Ventilation Isolation in the event of high radiation or monitor failure. (Refer to the South Texas FSAR section 11.5.2.3.7 for additional details.) Such a signal from either monitor is designed to isolate the supplementary purge and normal purge system valves. The supplementary purge system, which was in operation at the time, was automatically isolated at the time of the event.

Following the event the control room operators (utility-licensed) verified the Reactor Containment Building ventilation system valve alignment, reset the CVI logic, stopped the supplementary purge system fans, and initiated an investigation into the cause of the event.

The event, an ESF actuation, required notification to the NRC pursuant to 10CFR50.72(b)(2)(ii) and was reportable pursuant to 10CFR50.73(a)(2)(iv). No radioactivity or radioactive effluent had yet been produced at the unit; therefore, there were no safety consequences as a result of the event.

CAUSE OF OCCURRENCE:

Interviews with the Unit Supervisor and the Reactor Operator on shift at the time of the actuation revealed that they were unable to establish what could have caused this problem. The Reactor Operator stated that he did not see anyone around the monitor control panel in the control room when monitor sample flow was lost and was not aware of anyone operating the radiation monitor locally at the time of the actuation. The Unit Supervisor made the same statement as the Reactor Operator.

A review of the alarm history file revealed that no other radiation monitors produced the CVI actuation. Also, alarm history files show that a power failure did not occur (which would have resulted in the shutdown of the sample pump).

Various experiments were attempted to reproduce a similar actuation, and none were successful. The pump control relay was mechanically agitated in an attempt to produce vibrations which could have caused the monitor to lose sample flow. Containment purge ventilation was isolated and radiation monitor RT-8012 continued to run. Also, the SSPS was taken in and out of the test mode to attempt to cause an ESF actuation. This produced negative results as well.

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The indications and circumstances of the event are consistent with the conclusion that the sample pump was shut down locally by either a) use of the "Flow" pushbutton, b) use of the manual pump control switch, or c) closing and reopening one of the valves in the sample flow path (a valve line-up of the monitor was conducted and revealed no valves out of position), or by operation from the control room panel.

As such, the root cause of the loss of sample flow to the monitor could not be firmly established. However, the most likely cause appears to be unauthorized operation of controls or valves at the monitor sample skid or control room panel.

CORRECTIVE ACTION:

1. The following corrective actions have been implemented to reduce the possibility of inadvertent or unauthorized monitor operations:

   a. Caution signs have been installed in the control room and at the monitor skid for each of the radiation monitors which can cause an ESF actuation.

   b. Protective covers have been provided on the radiation monitor control modules in the control room to prevent inadvertent monitor ESF actuations.

   c. Training has been provided to selected plant personnel on the radiation monitoring system controls and operation.

   d. The "Flow" pushbuttons in the control room have been disabled for each of the radiation monitors which can cause an ESF actuation on a monitor failure.

2. The ESF actuation logics will be modified so that failure of a radiation monitor channel does not cause an ESF actuation. This modification will be implemented when NRC approval is received.

ADDITIONAL INFORMATION:

The following related incidents at STP Unit 1 have been reported to the NRC:

1. LER 87-001 described an event wherein apparent misoperation of a "Flow" pushbutton contributed to the shutdown of a radiation monitor which is required to be operable for Technical Specification compliance.

2. LER 87-004 described an event wherein an ESF actuation was caused by loss of sample flow to a control room radiation monitor due to inadvertent operation of a "Flow" pushbutton.

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3. LER 87-006 described an event wherein an ESF actuation was caused when sample flow to a control room ventilation intake radiation monitor was isolated due to the use of an incorrect procedure.

4. LER 87-010 describes an event wherein an ESF actuation was caused by a malfunction of a Fuel Handling Building atmosphere radiation monitor.

5. LER 87-024 described an event wherein an ESF actuation was caused by loss of sample flow to a control room radiation monitor due to inadvertent operation of a "Flow" pushbutton.

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The Light company
Houston Lighting & Power

P.O. Box 1700 Houston, Texas 77001 (713) 228-9211

June 13, 1988
ST-HL-AE-2687
File No.: G26
10CFR50.73

U. S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, DC 20555

South Texas Project Electric Generating Station
Unit 1
Docket No. STN 50-498
Revision 2 to Licensee Event Report 87-002 Regarding a Containment Ventilation Isolation Due to Loss of Sample Flow to a Containment Radiation Monitor

On August 26, 1987, Houston Lighting & Power (HL&P) notified the NRC pursuant to 10CFR50.72 of a reportable event regarding a containment ventilation isolation due to a loss of sample flow to a containment radiation monitor. Revision 0 of this report was sent to the NRC on September 25, 1987. Revision 1 was sent to the NRC on June 1, 1988, to define revised corrective actions based on subsequent evaluation performed by an Engineering task force. HL&P personnel discovered the following typographical errors in the LER: The incorrect year was given in blocks 5 and 6 of NRC form 366, and in block 6 of NRC form 366A; the reportability requirement was not marked in block 11 of NRC form 366. This revision corrects those errors. The event did not have any adverse impact on the health and safety of the public. In accordance with 10CFR50.73 HL&P submits the attached Licensee Event Report (LER 87-002, Revision 02).

If you should have any questions on this matter, please contact Mr. C.A. Ayala at (512) 972-8628.

G. E. Vaughn
Vice President
Nuclear Plant Operations

GEV/RSS/km

Attachment: Licensee Event Report 87-002, Revision 2; Loss of Sample Flow to Containment Purge Radiation Monitor Causes Containment Ventilation Isolation

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