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 3

TITLE (4) Control Room Ventilation Actuation to Recirculation Mode Due to a Toxic Gas Monitor Detecting Paint Fumes

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
1 1	1 3	8 7	8 7	0 1 4	0 1	1 2		8 7		0 5 0 0 0

OPERATING MODE (9)	4	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	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 Ayala - Supervising Licensing Engineer	AREA CODE 5 1 2 — 9 7 2 - 1 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	
E											

SUPPLEMENTAL REPORT EXPECTED (14)		EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
YES (If yes, complete EXPECTED SUBMISSION DATE)	XX NO				

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

At approximately 2326 hours on November 12, 1987 with Unit 1 in Mode 4 (initial startup testing), an auto-actuation of the Control Room Ventilation System to the recirculation mode occurred as a result of a toxic gas monitor detecting high levels of toxic gas. The control room ventilation actuation to recirculation mode is an Engineered Safety Feature (ESF). The Control Room Operators verified the recirculation mode damper lineup and initiated an investigation of the event. The investigation determined that the event was caused by the toxic gas monitor detecting paint fumes containing hydrocarbons which have infrared absorption characteristics similar to anhydrous ammonia and ammonia hydroxide. These are toxic gases of concern at the STPEGS. Painting of a newly installed door proved to be the source of the fumes. Painting in the vicinity has been suspended until corrective actions are implemented. The painting control procedure will be revised to include a toxic gas evaluation before painting is allowed within the Control Room Air Inlet Chase. This event represents a breakdown in the management control process.

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NL.LER87014

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

DESCRIPTION OF OCCURRENCE:

At approximately 2326 hours on November 12, 1987 with the Unit in Mode 4, an auto-actuation of the control room ventilation to recirculation mode occurred as a result of toxic gas monitor XE-9326 detecting high levels of toxic gas. The control room operators verified that the Control Room Ventilation System damper lineup occurred correctly and initiated an investigation to determine the cause of the event.

The immediate investigation identified that the source of the gas was fumes from painting activities in the vicinity of the monitor.

The Toxic Gas Monitoring System is a non-Class 1E system which upon detection of any one of several toxic gases provides input to the ESF and causes the Control Room Ventilation System to automatically go into a recirculation mode.

The NRC was notified of an ESF actuation pursuant to 10CFR50.72(b)(2)(ii) at 0047 hours on November 13, 1987. The safety system functioned as designed as shown by verification of the system dampers and equipment status immediately following the event. There were no adverse safety consequences as a result of the event since the Unit had not yet gone critical or produced any radioactivity. The paint fumes detected were not detrimental to the Control Room Operators.

CAUSE OF OCCURRENCE:

The investigation determined that the root cause of the event was that the administrative controls for use of paints and solvents did not address the potential for these substances to cause toxic gas monitor actuations, and did not impose adequate controls. A contributing factor was two open pipe penetrations between room 501B and the air inlet chase for the Control Room and Electrical Auxiliary Building Ventilation System. These penetrations provided a path for the paint fumes to be drawn into the inlet air chase and subsequently into the toxic gas monitors.

The fumes from the painting activity contained mineral spirits which is a mixture of aliphatic and aromatic hydrocarbons. Various alkane or alkene groups of hydrocarbons possess medium to high absorption of the same frequency of infrared light as anhydrous ammonia and ammonia hydroxide. These are toxic gases of concern at the STPEGS. The absorption of the infrared light by the mineral spirits caused the toxic gas monitors to alarm and initiate the auto-actuation of the control room ventilation to the recirculation mode.

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

CORRECTIVE ACTION:

Painting was suspended in the vicinity of the monitors until corrective actions are implemented. To prevent recurrence of this event, the following corrective actions are being taken:

1. Warning signs on doors leading into the air intake chase to warn personnel of the effect of paints and solvents on the Control Room Ventilation System have been installed.

2. The open penetrations in Room 501B will be sealed to prevent air from passing between the return air plenum and the air intake chase. The penetrations will be sealed by December 31, 1987.

3. The plant procedure controlling solvents, paints and painting processes will be revised to include controls on the use of paint solvents in areas connecting to the Control Room ventilation air supply. This procedure will be revised by January 15, 1988.

ADDITIONAL INFORMATION:

Although the South Texas Project has had a number of control room ventilation actuations to recirculation mode, this event is unique as to its root cause.

No other occurrences of similar events have occurred at the South Texas Project; however, there has been a task force formed to evaluate the design of the Toxic Gas Monitoring System.

NL.LER87014

The Light company
Houston Lighting & Power

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

December 18, 1987
ST-HL-AE-2452
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 Nos. STN 50-498
Revision 01 to the Licensee Event Report
Regarding a Control Room Ventilation
Actuation to Recirculation Mode Due to
a Toxic Gas Monitor Detecting Paint Fumes

Reference: HL&P letter ST-HL-AF-2440, dated December 12, 1987, from G. E. Vaughn to USNRC Document Control Desk submitting LER 87-014 (Revision 0).

The referenced Licensee Event Report (LER No. 87-014) was submitted with a typographical error in the text, "Corrective Action", section. The Corrective Action item number 2 of this section should read "...December 31, 1987." in lieu of "...December 31, 1988". The attached revision 01 to the report corrects this error.

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/JB/dlf

Attachment: Revision 01 to the Licensee Event Report Regarding a Control Room Ventilation Actuation to Recirculation Mode Due to a Toxic Gas Monitor Detecting Paint Fumes.

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cc:

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