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)
LaSalle County Station, Unit 1	0 5 0 0 0 3 7 3	1 OF 0 3

TITLE (4)
Chlorine Detector Actuation

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 8	8 5	8 5	0 4 3	0 0	0 6	0 6	8 5	LaSalle Co., Unit 2	0 5 0 0 0 3 7 4
										0 5 0 0 0

OPERATING MODE (9)	1	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR § (Check one or more of the following) (11)			
POWER LEVEL (10)	0 9 6	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
Richard J. Rohrer, extension 575	AREA CODE 8 1 5 3 5 7 - 6 7 6 1

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	
B	V I	D E T	W 0 2 5	N							

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)

At 1938 hours on May 8, 1985, the Control Room received an alarm for "High Chlorine/Ammonia Concentration" for the "B" train of the Control Room/Auxiliary Electrical Equipment Room HVAC (VC/VE) system. The alarm resulted in a signal for Engineered Safety Feature (ESF) damper operations to isolate the "B" VC/VE train from outside air and to initiate recirculating air flow through charcoal filters. The "B" VC/VE train was not in use, so all ESF dampers were already in their actuated state.

The cause for this event was a false actuation of one or both of the chlorine detectors of the "B" VC/VE train. Investigation revealed two possible causes: settling in of new parts on the "B" detector, or a low electrolyte drip rate on the "A" detector.

Both detectors were reset within five minutes after actuation, resulting in proper detector operation with no further problems. Unit 1 was at 96% power and Unit 2 was in Cold Shutdown at the time of the event.

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I. EVENT DESCRIPTION

At 1938 hours on May 8, 1985, while Unit 1 was in Operational Condition 1 (Power Operation) at 96% power and Unit 2 was in Operational Condition 4 (Cold Shutdown) at 0% power, the Control Room received an alarm for "High Chlorine/Ammonia Concentration" in the air intake to the "B" train of the Control Room/Auxiliary Electrical Equipment Room HVAC (VC/VE), (VI) system. This alarm resulted in a signal for Engineered Safety Feature (ESF) damper operations to isolate the "B" VC/VE train from outside air and to initiate recirculating airflow through charcoal filters. However, since the "B" VC/VE train was not in use at the time and all ESF dampers were in their actuated state, no ESF actuations occurred as a result of this alarm.

II. CAUSE

The cause of this event was a false signal generated by one or both of the chlorine detectors. Investigation has revealed two possible sources for this false signal.

First, the "B" chlorine detector for the "B" VC/VE train (OAE-VC091B) had been maintained earlier on the day of the event and may have spuriously tripped as a result of settling in of new parts. The maintenance consisted of performance of procedure LIP-GM-939, "Routine Maintenance of the Chlorine Detectors for Control Room HVAC". This possibility is supported by the fact that the "B" detector gave several successive alarm/normal indications before permanently clearing when this chlorine detector was reset.

Another possible cause for the alarm was that the electrolyte drip rate for the "A" chlorine detector (OAE-VC091A) for this VC/VE train was lower than normal, but still within tolerance, during this event.

The electrolyte drip rate affects detector performance as follows. The sensor consists of a double helix arrangement of two platinum electrodes covered with an electrolyte (potassium iodide solution). This sensor is continuously exposed to a sample of air from the intake to the VC/VE system, and chlorine gas in this sample causes a chemical reaction in the electrolyte, producing a pulse of electrical current in the platinum wires. The electrical pulse is detected by internal circuitry which activates local and remote alarms and initiates the appropriate automatic actions.

The potassium iodide solution is normally replenished continuously by flow from a small storage vessel mounted above the sensor. The rate of replenishment is measured by observing the rate at which drops of solution drip from the sensor. A desired drip rate is between 0.25 drops/minute and 1 drop/minute. OAE-VC091A was found at 0.156 drops/minute during maintenance on May 8, 1985, prior to this event. Since the replenishing flow of electrolyte was not at its normal rate, the electrolyte on the sensor was exposed to the sample air for a longer period than normal. This caused the chlorine concentration at which the reaction in the electrolyte occurs to be lowered below its designed setpoint of 5 ppm. It is possible that the low drip rate caused the detector

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

II. CAUSE (Continued)

to falsely trip at a lower concentration of chlorine.

The chlorine detectors at LaSalle were manufactured by Wallace and Tiernan and are model number 50-125.

III. PROBABLE CONSFQUENCES OF THE OCCURRENCE

This event resulted in no consequences to plant safety. No ESF dampers changed state since the "B" VC/VE train dampers were already positioned in the conservative configuration. The "A" VC/VE train was unaffected by this event and continued to operate normally.

IV. CORRECTIVE ACTIONS

The chlorine detectors for the "B" VC/VE train were reset and observed to operate properly. The detectors were fully operable at 1943 hours on May 8, 1985. On May 9, 1985, the Instrument Maintenance Department completed the maintenance on OAE-VC091A, restoring its drip rate to 0.457 drops/minute, within the desired range.

V. PREVIOUS OCCURRENCES

Settling in of new parts was identified as a possible cause for chlorine detector actuation in Licensee Event Report 373/84-068-00.

VI. NAME AND TELEPHONE NUMBER OF PREPARER

Richard J. Rohrer, 815/357-6761, extension 575.

Commonwealth Edison
LaSalle County Nuclear Station
Rural Route #1, Box 220
Marseilles, Illinois 61341
Telephone 815/357-6761

June 6, 1985

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

Dear Sir:

Reportable Occurrence Report #85-043-00, Docket #050-373 is being submitted to your office in accordance with 10CFR 50.73.

for R. D. Bishop
G. J. Diederich
Station Manager
LaSalle County Station

GJD/DRR/kg

Enclosure

xc: NRC, Regional Director
INPO-Records Center
File/NRC

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