10 CFR 50.73

PHILADELPHIA ELECTRIC COMPANY

LIMERICK GENERATING STATION
P. O. BOX A
SANATOGA, PENNSYLVANIA 19464

(215) 327-1200 EXT. 2000

M. J. McCORMICK, Jr., P.E.
PLANT MANAGER
LIMERICK GENERATING STATION

February 7, 1990
Docket No. 50-353
License No. NPF-85

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

SUBJECT: Licensee Event Report
Limerick Generating Station - Units 1 and 2

This LER reports the discovery of the inoperability of a containment H2/O2 analyzer without the associated Technical Specification required ACTION being met due to incorrect tubing connections caused by mislabeling by the vendor/supplier of the analyzer.

Reference:	Docket No. 50-353
Report Number:	2-90-002
Revision Number:	00
Event Date:	January 8, 1990
Report Date:	February 7, 1990
Facility:	Limerick Generating Station P.O. Box A, Sanatoga, PA 19464

This LER is being submitted pursuant to the requirements of 10 CFR 50.73(a)(2)(i)(B).

Very truly yours,

M J McCormick J

DCS:aj

cc: W. T. Russell, Administrator, Region I, USNRC
T. J. Kenny, USNRC Senior Resident Inspector, LGS

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)

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
Limerick Generating Station, Unit 2	0 5 0 0 0 3 5 3	1 OF 0 6

TITLE (4)

Hydrogen/Oxygen Analyzer Inoperability due to Installation Error

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 1	0 8	9 0	9 0	-	0 0 2	-	0 0	0 2	0 7	9 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)			
	1	20.402(b)	20.405(c)	50.73(a)(2)(iv)	73.71(b)
POWER LEVEL (10)	1 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)	OTHER (Specify in Abstract below and in Text, NRC Form 366A)
		20.405(a)(1)(iii)	X 50.73(a)(2)(i)	50.73(a)(2)(x)(i)(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
G. J. Madsen, Regulatory Engineer	2 1 5 3 2 7 - 1 2 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
YES (If yes, complete EXPECTED SUBMISSION DATE)	X NO				

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

On January 5, 1990, at 0050 hours, a Unit 2 containment H2/O2 analyzer was declared inoperable due to high H2/O2 concentration indication during containment inerting. Following troubleshooting, on January 8, 1990, we determined that the analyzer had been inoperable since its installation. The H2/O2 analyzers have been required to be operable in accordance with Technical Specifications (TS) since initial criticality of the unit. The cause of the event was reversed tubing connections in installation of the analyzer due to mislabeling by the analyzer vendor/supplier. At no time during the inoperability of the analyzer was there a condition which would have resulted in increased H2/O2 concentrations in the containment. Containment sampling revealed decreased H2/O2 concentrations as an expected result of the nitrogen inerting. A supervisory block was used to temporarily correct the installation error and the analyzer was declared operable at 0001 hours on January 6, 1990; approximately 23 hours after being declared inoperable. The analyzer was permanently restored to its designed installation configuration on January 17, 1990. This event is considered an isolated occurrence and no further actions to prevent recurrence are planned. The event is being reported in accordance with 10CFR 50.73(a) 2)(i)(B) as operation in a condition prohibited by Technical Specifications.

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

Unit Conditions Prior to the Event:

Operating Condition: 1 (Power Operation)
Power Level: 100%

Description of the Event:

On January 4, 1990, at approximately 2246 hours, licensed operators began nitrogen inerting of the Unit 2 Drywell (DW) and Suppression Pool (SP) in preparation for Commercial Operation of the unit. As the inerting continued, operations personnel identified that the indication of Oxygen (O2) and Hydrogen (H2) concentration in the SP atmosphere was higher than expected and was not decreasing as anticipated during inerting. The containment H2/O2 analyzer (EIIS:IK) (20S206) was declared inoperable at 0050 hours on January 5, 1990 due to the unusually high readings. This placed the plant in a seven day Technical Specifications (TS) 3.3.7.5 Limiting Condition of Operation (LCO) ACTION statement.

During troubleshooting of the analyzer a Health Physics (HP) technician requested an Instrumentation and Controls (I&C) technician to remove the return gas sample point line cap to enable him to obtain a direct sample of the SP atmosphere (see attached sketch). At this time, approximately 1845 hours on January 5, 1990, the I&C technician determined that the ports on the sample skid for the sample line and exhaust to the containment were incorrectly tubed. This resulted in a recirculation path back through the analyzer rather than an exhaust path to the SP as designed. A sample of the SP atmosphere was obtained to verify that the nitrogen inerting was progressing as planned. A Maintenance Request Form (MRF) was generated to correct the reversed tubing and the designed sample line isolation valve 57-2063 was blocked open with a supervisory blocking tag attached. The open valve resulted in an exhaust path to the SP as designed and the analyzer was recalibrated and restored to operable status at 0001 hours, January 6, 1990, approximately 23 hours after discovery of the inoperable condition.

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

On January 8, 1990, after further investigation we determined that the analyzer would not have provided accurate indication of H2/O2 concentrations in the discovered configuration. Therefore, the analyzer had never been operable since it was first required to be (i.e. initial criticality of the unit). The seven day TS ACTION for one of two analyzers being inoperable was never met. Accordingly, this event is being reported in accordance with 10 CFR 50.73(a)(2)(i)(B) as operation in a condition prohibited by TS.

Consequences of the Event:

The H2/O2 analyzers are installed to give indication of and alarm on high H2/O2 concentrations in the DW or SP thereby avoiding potentially explosive mixtures.

During the inoperable time of the analyzer, no condition existed that would have caused hydrogen or oxygen generation in the DW or SP. Sampling performed by HP technicians after determination of the analyzer inoperability indicated that the nitrogen inerting was serving to reduce the H2/O2 concentrations in the DW and SP. Therefore, we have concluded that the plant was at no time in a seriously degraded condition.

There is a redundant H2/O2 analyzer installed (20S205) which can also sample either from the SP or DW. However, low H2/O2 concentration indications on this redundant analyzer caused it to be declared inoperable approximately 13 hours after analyzer 20S206 was declared inoperable. With both H2/O2 analyzers inoperable, the TS LCO 48-hour ACTION statement was entered. 20S206 was restored to operability prior to completion of the 48 hours thereby placing the plant back within the constraints of the previously mentioned seven day TS ACTION. The low H2/O2 concentration indications on 20S205 were caused by internal leakage in the analyzer. Therefore, we could not depend on the redundant analyzer indications being accurate.

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

Cause of the Event:

The cause of this event was an error in the labeling of the connection ports on a vendor supplied analyzer. The H2/O2 analyzers are supplied by Comsip-Delphi (model-K). Installation of the analyzer was accomplished by connecting the labeled outlet/inlet ports to the desired locations/lines in the plant. In this instance (see attached sketch) the port on the panel for connection to the sample line was labeled as the port for connection to the exhaust to containment and vice-versa. As a result of the reversed installation, the normally closed sample point isolation valve, 57-2063, was in the line exhausting to containment while the sample point line had only a cap. This resulted in an indeterminate percentage of sample recirculation through the analyzer rather than normal exhaust to the SP or DW.

During the pre-operational test phase analyzer calibration was considered to have been achieved because, during calibration, PCV-57-299A (see attached sketch) acts as a stop valve forcing the exhaust gases back to the SP through the sample line. This configuration, although not a designed exhaust path to the SP, would allow sufficient exhaust flows to achieve calibration of the analyzer. The problem was not suspected because flow through the analyzer was observed. During normal operation PCV-57-299A would allow recirculation due to the closed exhaust path preventing accurate indication of the SP H2/O2 concentration.

Corrective Actions:

The return gas sample point valve 57-2063 was opened and then a supervisory block was applied. The analyzer was calibrated by I&C technicians and declared operable at 0001 on January 6, 1990. A MRF was initiated to correct the reversed tubing to agree with approved design. The physical work was completed January 17, 1990, the supervisory block on 57-2063 was removed, and the sample valve was restored to its normally closed position.

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

Actions Taken to Prevent Recurrence:

This event is considered to be an isolated occurrence. There are only four H2/O2 analyzer panels in the plant (two on each unit) and the remaining three were verified to be properly labeled and tubed. Therefore, no further actions to prevent recurrence are planned.

Previous Similar Occurrences:

No previous similar occurrences have been experienced at either unit at Limerick Generating Station.

Tracking Codes: B9-Construction/Installation error

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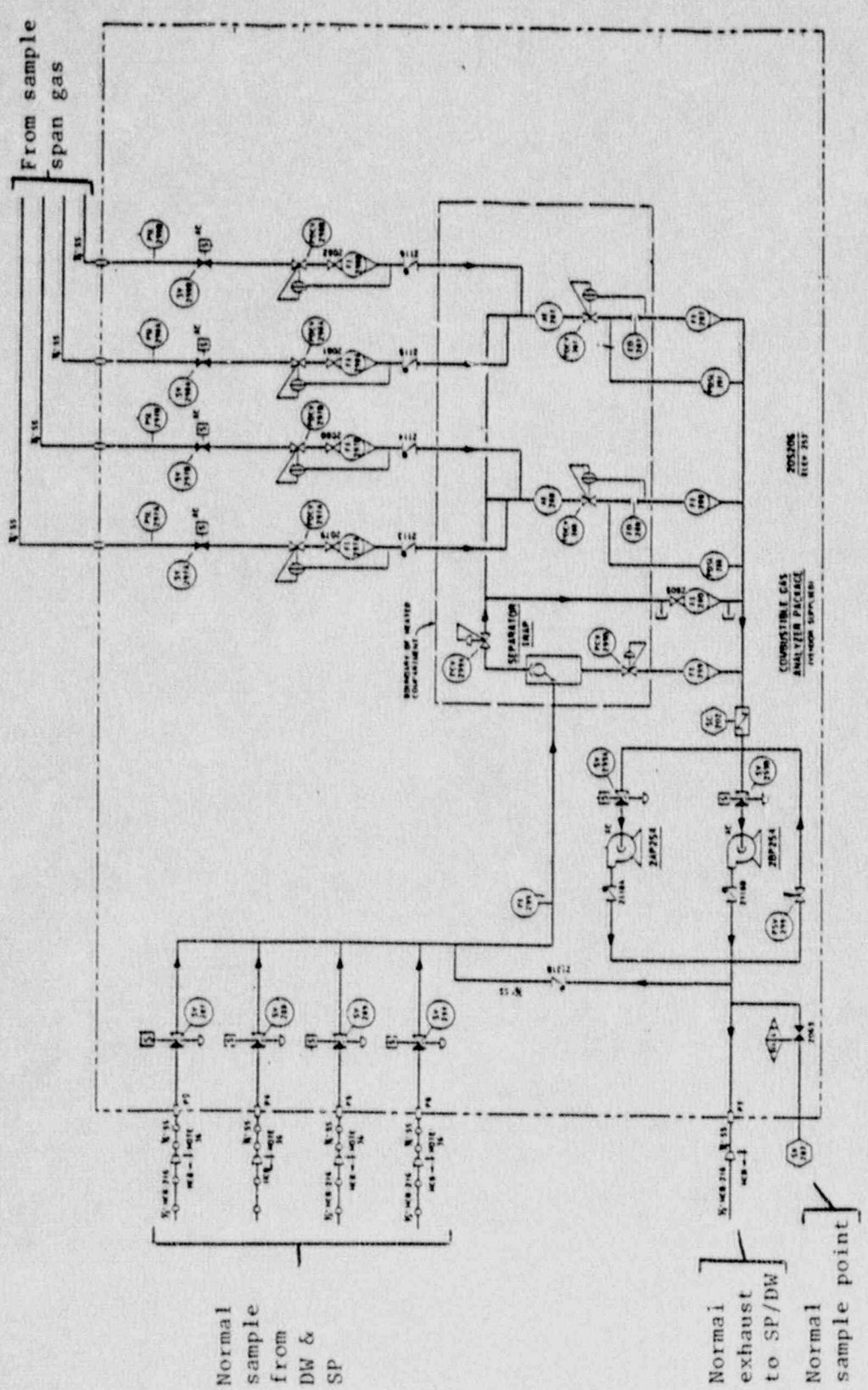
TEXT (If more space is required, use additional NRC Form 366A's) (17)



(See LGS Piping and Instrument Diagram M-57 sh 6 of 6 for detail)