

# CATEGORY 1

## REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR:9801050326 DOC.DATE: 97/12/26 NOTARIZED: NO DOCKET #  
FACIL:50-220 Nine Mile Point Nuclear Station, Unit 1, Niagara Powe 05000220  
AUTH.NAME AUTHOR AFFILIATION  
MAZZAFERRO,P.A. Niagara Mohawk Power Corp.  
ABBOTT,R.B. Niagara Mohawk Power Corp.  
RECIP.NAME RECIPIENT AFFILIATION

SUBJECT: LER 97-014-00:on 971125,vent & purge isolation during troubleshooting,was experienced.Caused by defective equipment.Cause of ESF actuation was verified,signal reset & drywell vent & purge valves were reopened.W/971226 ltr.

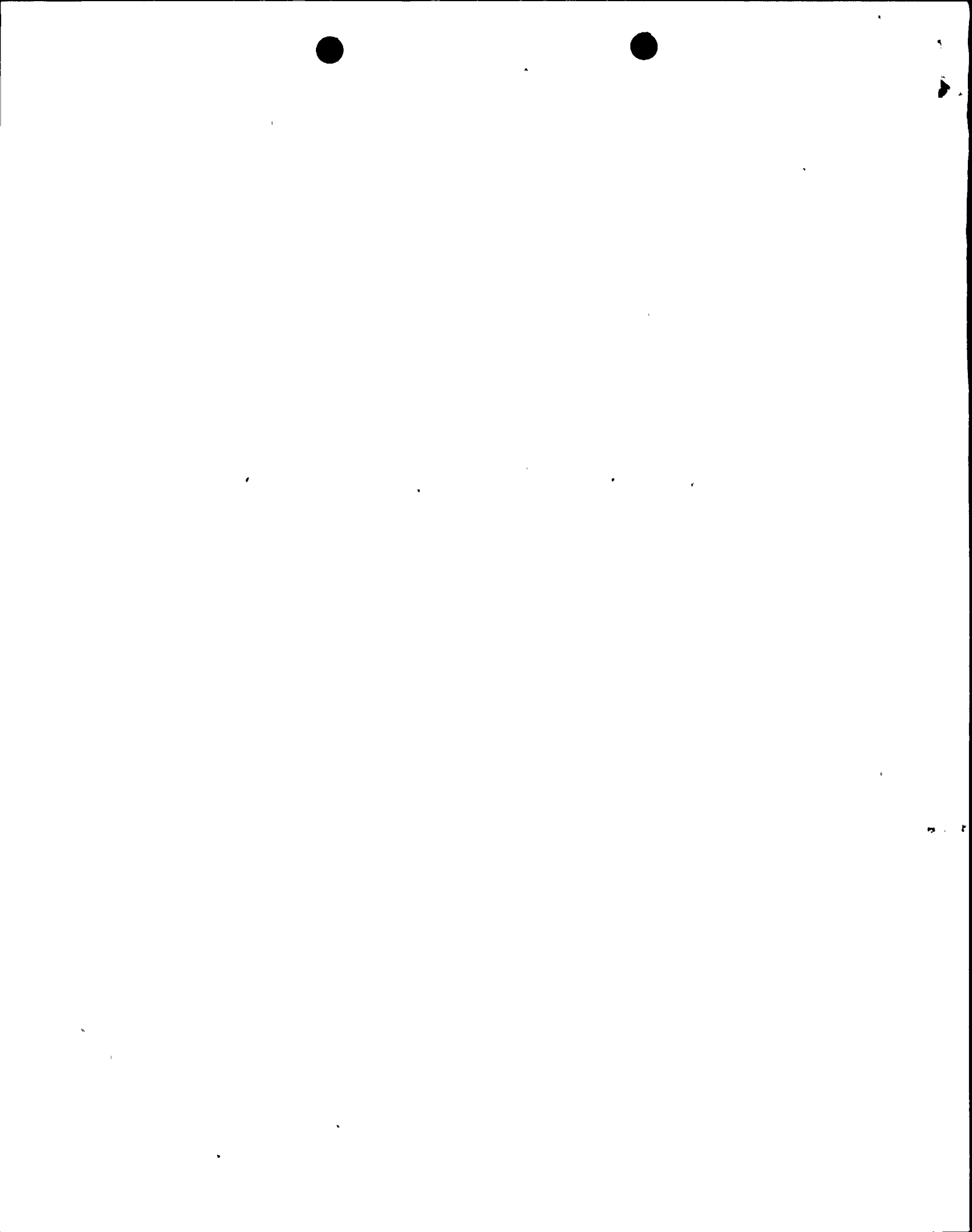
DISTRIBUTION CODE: IE22T COPIES RECEIVED:LTR 1 ENCL 1 SIZE: 5  
TITLE: 50.73/50.9 Licensee Event Report (LER), Incident Rpt, etc.

### NOTES:

	RECIPIENT ID CODE/NAME	COPIES LTR ENCL	RECIPIENT ID CODE/NAME	COPIES LTR ENCL
	PD1-1 PD	1 1	HOOD,D	1 1
INTERNAL:	ACRS	1 1	AEOD/SPD/RAB	2 2
	AEOD/SPD/RRAB	1 1	<del>FILE CENTER</del>	1 1
	NRR/DE/ECGB	1 1	NRR/DE/EELB	1 1
	NRR/DE/EMEB	1 1	NRR/DRCH/HHFB	1 1
	NRR/DRCH/HICB	1 1	NRR/DRCH/HOLB	1 1
	NRR/DRCH/HQMB	1 1	NRR/DRPM/PECB	1 1
	NRR/DSSA/SPLB	1 1	NRR/DSSA/SRXB	1 1
	RES/DET/EIB	1 1	RGN1 FILE 01	1 1
EXTERNAL:	L ST LOBBY WARD	1 1	LITCO BRYCE,J H	1 1
	NOAC POORE,W.	1 1	NOAC QUEENER,DS	1 1
	NRC PDR	1 1	NUDOCS FULL TXT	1 1

NOTE TO ALL "RIDS" RECIPIENTS:  
PLEASE HELP US TO REDUCE WASTE. TO HAVE YOUR NAME OR ORGANIZATION REMOVED FROM DISTRIBUTION LISTS OR REDUCE THE NUMBER OF COPIES RECEIVED BY YOU OR YOUR ORGANIZATION, CONTACT THE DOCUMENT CONTROL DESK (DCD) ON EXTENSION 415-2083

FULL TEXT CONVERSION REQUIRED  
TOTAL NUMBER OF COPIES REQUIRED: LTR 25 ENCL 25





NIAGARA MOHAWK

GENERATION  
BUSINESS GROUP

NINE MILE POINT NUCLEAR STATION/LAKE ROAD, P.O. BOX 63, LYCOMING, NEW YORK 13093

December 26, 1997  
NMP1L 1277

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

RE: LER 97-14  
Docket No. 50-220

Gentlemen:

In accordance with 10CFR50.73 (a)(2)(iv), we are submitting LER 97-14, "Vent and Purge System Isolation During Troubleshooting Due to Defective Equipment."

Very truly yours,

Richard B. Abbott

Plant Manager - NMP1

RBA/GJG/cmk  
Enclosure

xc: Mr. H. J. Miller, Regional Administrator, Region I  
Mr. B. S. Norris, Senior Resident Inspector  
Records Management

IE22/1



9801050326 971226  
PDR ADOCK 05000220  
S PDR

050009



111

LICENSEE EVENT REPORT (LER)

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (P-530), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503

FACILITY NAME (1) Nine Mile Point Unit 1	DOCKET NUMBER (2) 05000220	PAGE (3) 1 OF 4
---	-------------------------------	--------------------

TITLE (4)  
Vent and Purge System Isolation During Troubleshooting Due to Defective Equipment

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)	
11	25	97	97	014	00	12	26	97	N/A	05000	
									N/A	05000	

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) 000	<input type="checkbox"/> 20.402(b) <input type="checkbox"/> 20.405(a)(1)(i) <input type="checkbox"/> 20.405(a)(1)(ii) <input type="checkbox"/> 20.405(a)(1)(iii) <input type="checkbox"/> 20.405(a)(1)(iv) <input type="checkbox"/> 20.405(a)(1)(v)	<input type="checkbox"/> 20.405(c) <input type="checkbox"/> 50.36(c)(1) <input type="checkbox"/> 50.36(c)(2) <input type="checkbox"/> 50.73(a)(2)(i) <input type="checkbox"/> 50.73(a)(2)(ii) <input type="checkbox"/> 50.73(a)(2)(iii)	<input checked="" type="checkbox"/> 50.73(a)(2)(iv) <input type="checkbox"/> 50.73(a)(2)(v) <input type="checkbox"/> 50.73(a)(2)(vii) <input type="checkbox"/> 50.73(a)(2)(viii)(A) <input type="checkbox"/> 50.73(a)(2)(viii)(B) <input type="checkbox"/> 50.73(a)(2)(x)	<input type="checkbox"/> 73.71(b) <input type="checkbox"/> 73.71(c) <input type="checkbox"/> OTHER (Specify in Abstract below and in Text, NRC Form 366A)
-------------------------	--	--	--	--

LICENSEE CONTACT FOR THIS LER (12)

NAME P. A. Mazzaferro - Manager Technical Support NMP1	TELEPHONE NUMBER (315) 349-1019
---	------------------------------------

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
X	IL	JX	N305	N					

SUPPLEMENTAL REPORT EXPECTED (14)

YES (If yes, complete EXPECTED SUBMISSION DATE)  NO

EXPECTED SUBMISSION DATE (15)

MONTH	DAY	YEAR

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

On November 25, 1997, while performing troubleshooting on the Nine Mile Point Unit 1 (NMP1) gas radiation monitor (RAM-112-08A), an unexpected isolation of the containment vent and purge system was experienced. The design function of RAM-112-08A is to provide indication and alarm only, but due to an undetected equipment problem and system interaction due to that problem, an isolation occurred during troubleshooting efforts on the radiation monitor.

The root cause of this event has been determined to be equipment failure. The 24 VDC power supply for RAM-112-08A was found to be defective due to an intermittent short to ground.

The cause of the ESF actuation was verified, the signal was reset and the drywell vent and purge valves were reopened. The defective power supply was replaced, and RAM-112-08A was tested and returned to service. A failure modes analysis will be performed on the defective power supply.



12

x

12

LICENSEE EVENT REPORT (LER)  
TEXT CONTINUATIONESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION  
REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE  
RECORDS AND REPORTS MANAGEMENT BRANCH (P-530), U.S. NUCLEAR REGULATORY  
COMMISSION, WASHINGTON, DC 20555, AND TO THE PAPERWORK REDUCTION PROJECT  
(3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)				PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER		
Nine Mile Point Unit 1	05000220	97	- 14	- 00	02 OF 04	

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

**I. DESCRIPTION OF EVENT**

On November 25, 1997, while performing troubleshooting on the Nine Mile Point Unit 1 (NMP1) stack gas radiation monitor (RAM-112-08A), an unexpected isolation of the containment vent and purge system was experienced. The design function of RAM-112-08A is to provide indication and alarm only.

RAM-112-08A had been experiencing a series of random downscale alarms. Troubleshooting failed to determine the cause of the intermittent downscales. The monitor and detector were sent out and refurbished by a vendor. After reinstallation, the downscale conditions continued. A troubleshooting plan was developed, concentrating on the high voltage power supply and cabling to the detector. It was determined that troubleshooting needed to be performed on the circuit while energized, since the plan included taking voltage readings of the high voltage power supply output to the detector. Voltage readings taken at the back-plane of the monitor indicated a degraded high voltage at the output of the high voltage card, Pin X. The power supply had been set to 900 VDC, however, only 560 VDC was measured. Based on consultation with the vendor, it was concluded that connector P1, the combined high voltage to the detector and input signal to the monitor, should be disconnected and the high voltage measured with the circuit unloaded. This testing would determine where the voltage loss was occurring, either in the chassis or external to the chassis.

When the technician disconnected connector P1, computer point C061 (Offgas Effluent Stack Monitoring System (OGESMS) trouble) tripped and annunciator H1-3-8 (Stack Trouble) alarmed. Both of these plant impacts were expected due to alarm relays being de-energized. The technician then attached the Digital Multi-Meter (DMM) to the chassis common and the DMM probe to Pin X.

Immediately, stack gas radiation monitors RAM-RN10A and RAM-RN10B received a false high-high radiation signal. Containment Vent and Purge Isolation Valves CIV-201-07, CIV-201-08, CIV-201-09, CIV-201-10, CIV-201-16, CIV-201-17, CIV-201-31, and CIV-201-32 closed as required. The technician removed the probe when alarms sounded and the relays reset as designed.

**II. CAUSE OF EVENT**

The root cause of this event has been determined to be equipment failure. The 24 VDC power supply for RAM-112-08A was found to be defective due to an intermittent short to ground.

Monitor RAM-112-08A is bolted into a common chassis which contains the other stack gas radiation monitors (RAM-112-07A, RAM-RN10A, and RAM-RN10B) and several other radiation monitors. RAM-112-07A and RAM-112-08A are powered from separate 120 VAC busses. RAM-RN10A and RAM-RN10B are powered from separate station batteries. The common (negative polarity) of the station batteries is connected to station ground in the chassis where the radiation monitors are mounted. In addition, the 120 VAC neutrals are connected to station ground in the same chassis.



1950  
1951

1952  
1953  
1954  
1955  
1956  
1957  
1958  
1959  
1960  
1961  
1962  
1963  
1964  
1965  
1966  
1967  
1968  
1969  
1970  
1971  
1972  
1973  
1974  
1975  
1976  
1977  
1978  
1979  
1980  
1981  
1982  
1983  
1984  
1985  
1986  
1987  
1988  
1989  
1990  
1991  
1992  
1993  
1994  
1995  
1996  
1997  
1998  
1999  
2000  
2001  
2002  
2003  
2004  
2005  
2006  
2007  
2008  
2009  
2010  
2011  
2012  
2013  
2014  
2015  
2016  
2017  
2018  
2019  
2020  
2021  
2022  
2023  
2024  
2025



LICENSEE EVENT REPORT (LER)  
TEXT CONTINUATIONESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION  
REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE  
RECORDS AND REPORTS MANAGEMENT BRANCH (P-530), U.S. NUCLEAR REGULATORY  
COMMISSION, WASHINGTON, DC 20555, AND TO THE PAPERWORK REDUCTION PROJECT  
(3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Nine Mile Point Unit 1	05000220	97	14	00	03 OF 04

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

**II. CAUSE OF EVENT (cont'd)**

A root cause analysis determined that the isolation event was triggered when the DMM probe was being attached to the high voltage source, Pin X. Pin X is located in very close proximity to Pin Y, a connection to the 24 VDC power supply. The high voltage arced into the low voltage power supply and then traveled through the previously undetected fault in the low voltage power supply to the station ground.

The high voltage potential on the ground was detected in RAM-RN10A and RAM-RN10B, causing a change in state of a paired-set of transistors that control the alarm and trip relays in the monitors. The trip relays actuated and caused the isolation to occur.

**III. ANALYSIS OF EVENT**

This event is reportable in accordance with 10CFR50.73(a)(2)(iv), "any event or condition that resulted in a manual or automatic actuation of an Engineered Safety Feature (ESF), including the Reactor Protection System (RPS)."

The containment (torus and drywell) vent and purge system isolation valves were open to provide ventilation to the containment for access during plant shutdown for personnel comfort. The securing of this ventilation for a short duration had no significant impact on plant operation or safety. During power operations, the valves are normally closed, and are only opened for minimal times as required for venting or nitrogen makeup to the torus or drywell. If the isolation would have occurred during power operation with the valves open, the only impact would have been to temporarily secure this venting or makeup process. The safety function of the valves is to isolate and the valves performed as designed. Therefore, this event posed no safety consequence to the plant, plant personnel or the general public.

**IV. CORRECTIVE ACTIONS**

The cause of the ESF actuation was verified, the signal was reset and the drywell vent and purge valves were reopened.

The defective power supply was replaced, and RAM-112-08A was tested and returned to service.

A failure modes analysis will be performed on the defective power supply to determine the cause of the intermittent ground.



2  
4

1. 1. 1.

2. 2. 2.

3. 3. 3.

4. 4. 4.

LICENSEE EVENT REPORT (LER)  
TEXT CONTINUATIONESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION  
REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE  
RECORDS AND REPORTS MANAGEMENT BRANCH (P-530), U.S. NUCLEAR REGULATORY  
COMMISSION, WASHINGTON, DC 20535, AND TO THE PAPERWORK REDUCTION PROJECT  
(3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)				PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER		
Nine Mile Point Unit 1	05000220	97	14	00	04 OF 04	

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

V. **ADDITIONAL INFORMATION**

- A. Failed components: RAM-112-08A 24 VDC power supply
- B. Previous similar events:

LER 89-16 described an ESF actuation caused by personnel error during a Technical Specification Surveillance Requirement involving source checking the OGESMS. This error involved failure to reset the isolation signal on one channel before proceeding to the other channel. As a result, the corrective actions taken for that event would not have precluded this event.

LER 97-13, "Engineered Safety Feature Actuation During Calibration Due to Personnel Error", described an isolation of the drywell vent and purge lines during calibration of stack gas radiation monitor RN10B. That event was caused by personnel error when an incorrect high activity gamma source was used to perform the calibration procedure. The corrective actions for that event included disciplinary action and reviewing the event with Chemistry personnel. Therefore, these actions would not have prevented this event.

- C. Identification of components referred to in this LER:

COMPONENT	IEEE 803 FUNCTION	IEEE 805 SYSTEM ID
Drywell	N/A	NH
Vent/Purge/Nitrogen System	N/A	LK
Radiation Monitors	MON	IL
Power Supply	JX	IL

