

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) <b>PLANT VOGTLE - UNIT 1</b>	DOCKET NUMBER (2) <b>0 5 0 0 0 4 2 4 1</b>	PAGE (3) <b>OF 0 4</b>
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TITLE (4)  
**CONTAINMENT VENTILATION ISOLATION DUE TO SENSING TUBE FAILURE AND SOFTWARE DESIGN**

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)
											<b>0 5 0 0 0</b>
<b>1 2 2</b>	<b>1 8 7</b>	<b>8 7</b>		<b>0 7 3</b>	<b>0 0</b>	<b>0 1 1</b>	<b>5 8 8</b>	<b>8 8</b>			<b>0 5 0 0 0</b>

OPERATING MODE (8) <b>1</b>	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR § (Check one or more of the following) (11)					
POWER LEVEL (10) <b>0 1 9 9</b>	20.402(b)	20.405(c)	<input checked="" type="checkbox"/>	50.73(a)(2)(iv)	73.71(b)	
	20.405(a)(1)(ii)	50.36(c)(1)	<input type="checkbox"/>	50.73(a)(2)(v)	73.71(c)	
	20.405(a)(1)(iii)	50.36(c)(2)	<input type="checkbox"/>	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)	<input type="checkbox"/>	50.73(a)(2)(viii)(A)		
	20.405(a)(1)(iv)	50.73(a)(2)(ii)	<input type="checkbox"/>	50.73(a)(2)(viii)(B)		
20.405(a)(1)(v)	50.73(a)(2)(iii)	<input type="checkbox"/>	50.73(a)(2)(ix)			

LICENSEE CONTACT FOR THIS LER (12)

NAME <b>W. F. Burns, Nuclear Licensing Manager - Vogtle</b>	TELEPHONE NUMBER <b>4 0 4 5 2 1 6 1 - 1 7 1 0 1 1 4</b>
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COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NFRDS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NFRDS
<b>A</b>	<b>I L</b>	<b>D E I T A</b>	<b>3 1 7 1 0 1</b>	<b>N</b>					

SUPPLEMENTAL REPORT EXPECTED (14)

<input type="checkbox"/> YES (If yes, complete EXPECTED SUBMISSION DATE)	<input checked="" type="checkbox"/> NO	EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
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ABSTRACT (Limit to 1400 spaces, i.e., approximately fifteen single-space typewritten lines) (16)

On December 21, 1987, at 2223 CST, the plant was operating at 99 percent rated thermal power. A high level alarm was received from the Control Room Air Intake Radiogas Monitor, 1RE-12116, initiating a Control Room Ventilation Isolation (CRI) actuation.

This event was caused by a combination of a faulty sensing tube for the radiation monitor and the computer software design, i.e., the statistical counting algorithm within the data processing module (DPM) for the monitor, which interprets the input data to provide the high alarm.

Corrective action has included replacement of the tube and a proposed software change to provide a more statistically accurate high alarm.

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LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
PLANT VOGTLE - UNIT 1	0   5   0   0   0   4   2   4	8   7	-   0   7   3	-   0   0	0   2	0   0	4

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

A. REQUIREMENT FOR REPORT

This report is required per 10 CFR 50.73 (a)(2)(iv) since the actuation of the control room ventilation isolation (CRI) system represented an unplanned actuation of an Engineered Safety Feature (ESF) system.

B. UNIT STATUS AT TIME OF EVENT

Unit 1 was in Mode 1 (power operation) at approximately 99 percent of rated thermal power when the event occurred. Reactor coolant system temperature and pressure were approximately 588 degrees Fahrenheit and 2235 psig, respectively. There was no inoperable equipment that contributed to this event.

C. DESCRIPTION OF EVENT

On December 21, 1987 at 2223 CST, a high level alarm from the Control Room (CR) Air Intake Process Radiogas Monitor, 1RE-12116, was received. This initiated a Control Room Ventilation Isolation (CRI) actuation. Isolation dampers operated properly and the Emergency CR Ventilation systems started and functioned properly. The redundant CR air intake monitor, 1RE-12117, was checked and showed no increase in radiation or radioactivity. Health Physics sampled the control room and no radiation was detected. At 2302 CST, the high radiation alarm was considered to be spurious and radiation monitor 1RE-12116 was declared inoperable. It was placed in the test mode and a Limiting Condition of Operation (LCO #1-87-899) was entered. On December 22, 1987, at 0058 CST, the CR ventilation was returned to the normal mode of operation.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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

D. CAUSE OF EVENT

The high level alarm was caused by a combination of a faulty sensing tube for the radiation monitor and the computer software design, i.e., the statistical counting algorithm within the data processing module of the radiation monitor. This combination eventually resulted in a spurious high level alarm from the Control Room (CR) Air Intake Process Radiogas Monitor, 1RE-12116. A plateau curve test of the tube was conducted and the results showed a shift of 75 volts (increase) in the plateau. The shift causes the monitor to function on the point of the curve where a small change in the input to the radiation monitor sensor would cause a large rate of change to the output.

A contributor to this event was the software design, i.e., the statistical counting algorithm on the Programmable Read Only Memory (PROM) chip located in the Data Processing Module (DPM) for the monitor, which functions to alarm with a low confidence level on a small sample count. This results in a low statistical confidence factor. The software can cause a spurious alarm on a small number of counts with the failed sensing tube in the detector. The root cause of this event is a failed detector; however, the software can significantly increase the probability of a false alarm.

E. ANALYSIS OF EVENT

The CRI actuation was the result of a high alarm from the monitor 1RE-12116. However, this was a spurious alarm and no actual radiation condition existed. Based on this consideration and since the control room ventilation equipment operated properly, there was no adverse impact on plant safety or the health and safety of the public.

F. CORRECTIVE ACTIONS

The degraded/failed tube was replaced. The new tube was calibrated and determined to be functioning properly.

Westinghouse has been directed to revise the software to improve the statistical accuracy of the high alarm. It is expected that the improved software will be incorporated into the system by March 1, 1988.

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		8 7	- 0 7 3	- 0 0	0 4	OF 0 4

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

G. ADDITIONAL INFORMATION

1. Failed Components

Amperex Electronic Corp.  
Detector Tube (SN-410 - Model No. 912NB3  
Westinghouse No. 8459A44H01

2. Previous Similar Events

LER 50-424/1987-058 (event date - September 21, 1987)  
LER 50-424/1987-065 (event date - November 9, 1987)  
LER 50-424/1987-067 (event date - November 17, 1987)

Corrective actions for these events include vendor software changes which were incomplete at the time of this December 21, 1987, event.

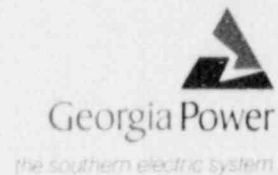
3. Energy Monitoring System - IL

- a. Radiation Monitoring System - IL
- b. Control Building Environmental Control System - VI

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L. T. Gucwa  
Manager Nuclear Safety  
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January 15, 1988

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

PLANT VOGTLE - UNIT 1  
NRC DOCKET 50-424  
OPERATING LICENSE NPF-68  
LICENSEE EVENT REPORT  
CONTAINMENT VENTILATION ISOLATION  
DUE TO SENSING TUBE FAILURE AND SOFTWARE DESIGN

Gentlemen:

In accordance with the requirements of 10 CFR 50.73(a)(2)(iv), Georgia Power Company is submitting a Licensee Event Report (LER) concerning an ESF actuation.

Sincerely,

*William S. Brown / for*

L. T. Gucwa

PAH/lm

Enclosure: LER 50-424/1987-073

c: (see next page)

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/ /

U. S. Nuclear Regulatory Commission  
January 15, 1988  
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c: Georgia Power Company

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