

# The Light company

Houston Lighting & Power

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

December 12, 1990  
ST-HL-AE-3645  
File No.: G26  
10CFR50.73

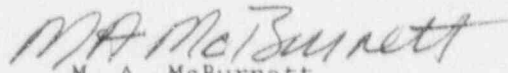
U. S. Nuclear Regulatory Commission  
Attention: Document Control Desk  
Washington, DC 20555

South Texas Project Electric Generating Station  
Unit 2  
Docket No. STN 50-499  
Licensee Event Report 90-017  
Regarding Class 1E 120 Volt AC Distribution Panel  
Energized by Alternate Power Source in  
Violation of Technical Specification

Pursuant to 10CFR50.73, Houston Lighting & Power Company (HL&P) submits the attached Licensee Event Report (LER 90-017) regarding a Class 1E 120 volt AC distribution panel energized by alternate power source during core alterations in violation of Technical Specifications. This event did not have any adverse impact on the health and safety of the public.

On December 3, 1990, an extension of the due date of this letter to December 14, 1990 was requested of, and granted by, Mr. Art Howell of NRC Region IV.

If you should have any questions on this matter, please contact Mr. C. A. Ayala at (512) 972-8628 or myself at (512) 972-8530.

  
M. A. McBurnett  
Manager,  
Nuclear Licensing

RAD/sgs

Attachment: LER 90-017 (South Texas, Unit 2)

9012170170 901212  
PDR ADDCK 05000499  
S PDR

A1/LER017U2.L01

A Subsidiary of Houston Industries Incorporated

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cc:

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Revised 10/08/90

L/ /NRC/

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.

# LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) Brunswick Steam Electric Plant Unit 1

DOCKET NUMBER (2)

05000325

PAGE (3)

01 OF 03

TITLE (4) Group 6 Isolation and SBTG Auto-Start Due to Scan Overload on the WRGM Microprocessor

EVENT DATE (5)			LER NUMBER (6)				REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)		
MONTH	DAY	YEAR	YEAR	SEQ. NO.	REV. NO.	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER		
11	17	90	90	-	020	-	00	12	13	90	BSEP Unit 2	05000324

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 5: (Check one or more of the following) (11)

OPERATING MODE (9)	5	20.402(b)	20.405(c)	x	50.73(a)(2)(iv)	73.71(b)
POWER LEVEL (10)	000	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)(vi)	OTHER (Specify in Abstract and Text)
		20.405(a)(1)(iii)	50.73(a)(2)(i)		50.73(a)(2)(vii)(A)	
		20.405(a)(1)(iv)	50.73(a)(2)(ii)		50.73(a)(2)(vii)(B)	
		20.405(a)(1)(v)	50.73(a)(2)(iii)		50.73(a)(2)(x)	

LICENSEE CONTACT FOR THIS LER (12)

NAME TONY HARRIS, REGULATORY COMPLIANCE SPECIALIST

TELEPHONE NUMBER

(919) 457-2038

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	IL	CPU	S637	N					

SUPPLEMENTAL REPORT EXPECTED (14)

YES (If yes, complete EXPECTED SUBMISSION DATE)	X	NO	EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
	X					

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

Unit 1 was in a refuel outage with the reactor defueled. Unit 2 was operating at 100% power. On 11/17/90, at 0718, a Group 6A and 6B Primary Containment Isolation System (PCIS) and Secondary Containment isolations were received, along with SBTG system auto-start. The event was the result of an isolation signal generated from the Wide Range Gas Monitor (WRGM) microprocessor, and was not a valid isolation on high radiation. No abnormal release was indicated prior to or following the isolation.

The event was due to a scan overload on the microprocessor. A technician performing a daily check of historical release data on the stack keyed in an incorrect information code on the microprocessor keypad. The caused a scan overload on the system, and caused relays in the microprocessor isolation logic to drop out, resulting in the Group 6 signal. The scan overload is a design problem with the microprocessor. The vendor has been contacted for replacement of this part of the system. Other WRGMs have in the Turbine Building have the same overload concern, but do not initiate isolation; however, replacement of these components is being evaluated. This event had minimal safety significance. Valves and systems in the isolation logic performed as designed.

# **LICENSEE EVENT REPORT (LER)** **TEXT CONTINUATION**

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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)	
Brunswick Steam Electric Plant Unit 1	05000325	YEAR 90	-	SEQUENTIAL NUMBER 020	-	REVISION NUMBER 00	02 of 03

TEXT (IF MORE SPACE IS REQUIRED, USE ADDITIONAL NRC FORM 365A'S) (17)

## EVENT

Group 6 isolation due to a scan overload on the Main Stack Wide Range Gas Monitor (WRGM) microprocessor.

## INITIAL CONDITIONS

Unit 1 was in the refuel mode with no fuel in the vessel. Secondary containment was not in affect. Unit 2 was at 100% power.

## EVENT DESCRIPTION

On 11/17/90, at approximately 0718, a Group 6A and 6B Containment Atmospheric Control System and Secondary Containment Isolation from the Stack Radiation Monitor signal occurred on Unit 1 and Unit 2. The isolation resulted in closure of Group 6 valves on both Unit 1 and Unit 2 with exception of the 1-CAC-V5 (Torus Nitrogen Inlet) and 1-CAC-V6 (Drywell Nitrogen Inlet) valves. These valves received a closed signal, but did not fully close due to the short duration of the isolation signal (approximately 450 milliseconds). The Unit 1 and Unit 2 Reactor Building ventilation dampers isolated and both Unit 2 Standby Gas Treatment (SBGT) system trains and Unit 1 "A" SBGT system train started as required. The Unit 1 "B" SBGT system train was out of service for maintenance. The Main Stack Radiation Monitor readings were verified prior to the event to be normal. Effluent release rate calculations were performed and did not indicate an abnormal release. The Main Stack Radiation Monitor was declared inoperable, and Technical Specification required sampling begun. Work Request/Job Order (WR/JO) 90-AUQD1 was initiated to investigate the reason for the isolation.

## EVENT INVESTIGATION/ROOT CAUSE

Troubleshooting was begun on the Main Stack Radiation Monitor to determine the origin of the momentary high radiation signal. Environmental and Radiation Control (E&RC) technicians were taking daily readings at the Stack Monitor keypad (RM-23) in the back panels of the Control Room for 24-hour stack release rate at the time of the event. This reading is not required by FSAR or Technical Specifications, but assists the count room in their release tracking. An information code for historical data is keyed into the RM-23 unit, which in turn extracts the data from the historical files in the RM-80 microprocessor.

The information code used to call up this program (201) was incorrectly keyed in by the technician as 200. This initiated closure of the relays in the high radiation logic, due to a problem in the RM-80 microprocessor computer program. The momentary (approximately 450 millisecond) relay reset generated by the microprocessor initiated the Group 6 isolation logic for both Unit 1 and Unit 2.

On 11/18/90, investigators attempted to recreate the isolation signal with no success. On 11/20/90, the incorrect information retrieval code was entered eight times before duplicating the signal. Eleven additional attempts were made later that day, with four isolation signals generated.

The vendor for the WRGM (Sorrento Electronics) was contacted concerning this problem. The vendor stated that he was aware of similar program problems at other utilities. Channel item requests that end in "00" (e.g., 100, 200, etc.)



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		90	-	020	-	00
						03 of 03

TEXT (IF MORE SPACE IS REQUIRED, USE ADDITIONAL NRC FORM 365A'S) (17)

result in a scan overload. Channel items which end in "00" are not associated with valid data base parameters, and are normally not requested. Requesting these channel items causes the RM-80 microprocessor to search for data that does not exist. When the search time exceeds the time frame allowed, the resulting monitor status is scan overload. A scan overload signal will trigger several relays to reset. These relays are the same relays that give the DOWN SCALE/INOP and HIGH RAD alarms in the control room, and initiate the Group 6 isolation, secondary containment and the SBT system auto start.

The root cause of this event is therefore a design problem with the computer program for the Stack Wide Range Gas Monitor (WRGM) RM-80 microprocessor, which may initiate an intermittent high radiation signal to the Group 6 isolation logic whenever a command function is keyed in which ends in "00".

## CORRECTIVE ACTIONS

An update to the WRGM microprocessor will be obtained from the vendor to eliminate this problem. As an interim measure, the non-essential daily readings will not be taken. In addition, personnel in the E&RC counting room, who have daily interface with the WRGM computer, have been made aware of the concern for a potential isolation when keying in information codes to the WRGM computer.

Other Sorrento RM-80 microprocessors are located at the Turbine Building exhaust WRGMs. These RM-80s are similar microprocessors, but do not initiate an isolation signal. These units initiate a high radiation alarm only. Replacement of the microprocessor boards for these units is being evaluated.

## EVENT ASSESSMENT

This event had minimal safety significance for both units. Unit 1 was in a refuel outage, with no fuel in the vessel. Secondary containment was not in affect at the time of the event. Unit 2 was in Mode 1 (RUN), at 100% power. The mitigating function of the WRGM isolation logic is to initiate a Group 6 isolation and SBT auto start signal. The SBT system, isolation signals and isolation valves functioned as designed during this event.

The WRGM microprocessor unit involved in this event was originally installed in June, 1983. Although other isolations have occurred due to problems with the WRGM, none have been the result of this microprocessor problem. One LER in the past three years involved a Group 6 isolation initiated by an isolation signal from the Stack WRGM. LER 1-88-022 involved a Group 6 isolation signal received during E&RC sampling; however, no conclusive reason could be determined for this event.

## SYSTEM/COMPONENT

Wide Range Gas Monitor (WRGM)  
RM-80 Microprocessor  
Standby Gas Treatment System (SBGT)  
Containment Atmospheric Control (CAC)  
Drywell Nitrogen Inlet Valve  
Torus Nitrogen Inlet Valve

## EIS CODE

IL  
IL/CPU  
BH  
BB  
BB/ISV  
BB/ISV