NRC Form 366 (9-83)

U.S. NUCLEAR REGULATORY COMMISSION
APPROVED OMB NO. 3150-0104
EXPIRES: 8/31/85

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
Grand Gulf Nuclear Station - Unit 1	0 5 0 0 0 4 1 6	1 OF 0 3

TITLE (4)
Generic Failure of Terminal Strips Could Cause Loss of Hydrogen Analyzers

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)
									N/A	0 5 0 0 0
1 1	0 7	8 5	8 5	0 4 3	0 1	0 5	2 9	8 6		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)			
4	20.402(b)	20.405(c)	50.73(a)(2)(iv)	73.71(b)
POWER LEVEL (10) 0 0 0	20.405(a)(1)(i)	50.36(c)(1)	X 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
Ronald Byrd/Licensing Engineer	AREA CODE 6 0 1 — 4 3 7 - 2 1 4 9

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	I P	C O N	X 9 9 9	Y							

SUPPLEMENTAL REPORT EXPECTED (14)		EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
X YES (If yes, complete EXPECTED SUBMISSION DATE)	NO		1 1	3 0	8 6

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

On November 7, 1985, technicians performing unrelated work on the hydrogen analyzers found terminal strips in all four hydrogen analyzers brittle, cracked, or broken. The terminal strips, Cinch Jones model numbers 3-140 and 6-141, are qualified for a service environment of 300 degrees F for 10 years. The degraded terminal strips had been in service from 8 to 17 months. The terminal strips are located in a compartment where the average air temperature during operation was maintained at 290 degrees F for proper operation of the analyzers. The temperature control switches are normally set to deenergize the heating elements at 300 degrees F. The degradation of the terminal strips is due to excessive heat. Temperatures in the compartment will be monitored to determine final corrective action. The terminal strips have been replaced with like components and the temperature control switch setpoints have been lowered to deenergize the heating elements at 285 degrees F. The vendor recommends a 275 degrees F average temperature for proper operation of the hydrogen analyzers.

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NRC Form 366A (9-83)

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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

A. Reportable Occurrence

On November 7, 1985, terminal strips in the four hydrogen analyzers (two containment hydrogen analyzers and two drywell hydrogen analyzers) were found to be brittle, cracked, or broken. The condition of the analyzers was determined to be reportable pursuant to 10CFR50.72(b)(2)(iii) and 10CFR50.73(a)(2)(v).

B. Initial Conditions

The plant was in mode 4, Cold Shutdown, due to a scheduled maintenance outage which began October 13, 1985.

C. Description of Occurrence

On November 7, 1985, technicians were troubleshooting an unrelated problem identified during the performance of a routine surveillance when they noticed that two terminal strips in hydrogen analyzer E61-K002B were cracked and brittle. The terminal strips are located in a compartment called the "hot box" where the average air temperature during operation was maintained at 290 degrees F for proper operation of the analyzers. The terminal strips are for the electrical connection of the conductivity cell and for the electrical connection of the unit's heater.

The other three hydrogen analyzers were checked and their terminal strips were found in the same condition. A Material Nonconformance Report (MNCR) was written to document these conditions. Although the degraded terminal strips did not cause a failure of the hydrogen analyzers, the ability of the analyzers to perform their safety function during accident conditions was questionable. The hydrogen analyzers were declared inoperable pending an engineering disposition.

D. Apparent Cause

The terminal strips are Cinch Jones model numbers 3-140 and 6-141. The terminal strips are qualified for a service environment of 300 degrees F for 10 years. The cell terminal strips were in service for approximately 17 months. The heater terminal strips were in service approximately 8 months. The degradation of the terminal strips is due to excessive heat. The temperature control switches are normally set to deenergize the heating elements at 300 degrees F. The temperature control switches were checked and their setpoints were found to be high. The heater cutoff points were up to 52 degrees F above 300 degrees F.

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All of the terminal strips had previously been replaced after a model 3-140 terminal strip was found deteriorated in May, 1984. The cause was believed to be excessive heat experienced during preoperational testing. The disposition of the MNCR written in May, 1984, for that nonconformance is not yet completed. A final disposition is pending a failure evaluation by Nuclear Plant Engineering (NPE) which is expected to be completed by the end of the first refueling outage.

E. Supplemental Corrective Action

The terminal strips in the hydrogen analyzer hot boxes were replaced with duplicate components. The temperature control switch trip setpoints are being reduced to 285 degrees F from 300 degrees F. The vendor recommends a 275 degrees F average temperature for proper operation of the hydrogen analyzers. Thermocouples and recorders will be used to monitor the hot box temperatures until the first refueling outage to determine final corrective action. The newly installed terminal strips will be inspected during the first refueling outage for possible deterioration. GGNS has been unable to procure terminal strips which are qualified for service at temperatures greater than 300 degrees F. Future corrective actions may include the deletion of the heater terminal strip located inside the hot box. An update to this report will be submitted following the first refueling outage.

F. Safety Assessment

The hydrogen analyzing system indicates post-accident hydrogen concentrations in the drywell and containment on a recorder in the Control Room. The hydrogen analyzers perform a monitoring function only, but are used by operators to determine when the hydrogen recombiners should be activated following a loss-of-coolant accident. The condition of the terminal strips did not cause a failure of the analyzers, but may have contributed to a failure during accident conditions.

MISSISSIPPI POWER & LIGHT COMPANY
Helping Build Mississippi
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May 29, 1986

O. D. KINGSLEY, JR.
VICE PRESIDENT NUCLEAR OPERATIONS

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

Gentlemen:

SUBJECT: Grand Gulf Nuclear Station
Unit 1
Docket No. 50-416
License No. NPF-29
File: 0260/L-835.0
Generic Failure of Terminal Strips Could Cause Loss of Hydrogen Analyzers
LER 85-043-01
AECM-86/0156

Reference: AECM-85/0393, dated December 9, 1985

Attached is Licensee Event Report (LER) 85-043-01 which is an interim report.

Yours truly,

ODK:lm
Attachment

cc: Mr. T. H. Cloninger (w/a)
Mr. R. B. McGehee (w/a)
Mr. N. S. Reynolds (w/a)
Mr. H. L. Thomas (w/o)
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