Entergy

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GNRO-2008/00039

May 15, 2008

U.S. Nuclear Regulatory Commission

Attn: Document Control Desk
Washington, DC 20555-0001

Subject: LER 2008-002-00- Reactor SCRAM Due to Main Generator Trip Caused by Current Transformer Lockout

Grand Gulf Nuclear Station, Unit 1
Docket No. 50-416
License No. NPF-29

Dear Sir or Madam:

Attached is Licensee Event Report (LER) 2008-002-00 which is a final report.

This letter does not contain any commitments.

Yours truly,

Michael J. Larson
Acting-Manager, Licensing

MJL/JEO/jeo
attachment: LER 2008-002-00
cc: (See Next Page)

cc: NRC Senior Resident Inspector
Grand Gulf Nuclear Station
Port Gibson, MS 39150

U. S. Nuclear Regulatory Commission
ATTN: Mr. Elmo E. Collins (w/a)
Regional Administrator, Region IV
611 Ryan Plaza Drive, Suite 400
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U. S. Nuclear Regulatory Commission
ATTN: Mr. Jack Donohew, NRR/DORL (w/2)
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NRC FORM 366 (9-2007) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB: NO. 3150-0104 EXPIRES: 08/31/2010

Estimated burden per response to comply with this mandatory collection request: 50 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Records and FOIA/Privacy Service Branch (T-5 F52), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to infocollects@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

LICENSEE EVENT REPORT (LER)

(See reverse for required number of digits/characters for each block)

1. FACILITY NAME	2. DOCKET NUMBER	3. PAGE
Grand Gulf Nuclear Station, Unit 1	05000416	1 OF 3

4. TITLE Reactor SCRAM Due to Main Generator Trip Caused by Unit Differential Lockout

5. EVENT DATE			6. LER NUMBER			7. REPORT DATE			8. OTHER FACILITIES INVOLVED	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO.	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
									N/A	N/A
03	21	2008	2008	- 002 -	00	05	15	2008	FACILITY NAME N/A	DOCKET NUMBER N/A

9. OPERATING MODE: 1

10. POWER LEVEL: 100

11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR§: *(Check all that apply)*

☐ 20.2201(b)	☐ 20.2203(a)(3)(i)	☐ 50.73(a)(2)(i)(C)	☐ 50.73(a)(2)(vii)
☐ 20.2201(d)	☐ 20.2203(a)(3)(ii)	☐ 50.73(a)(2)(ii)(A)	☐ 50.73(a)(2)(viii)(A)
☐ 20.2203(a)(1)	☐ 20.2203(a)(4)	☐ 50.73(a)(2)(ii)(B)	☐ 50.73(a)(2)(viii)(B)
☐ 20.2203(a)(2)(i)	☐ 50.36(c)(1)(i)(A)	☐ 50.73(a)(2)(iii)	☐ 50.73(a)(2)(ix)(A)
☐ 20.2203(a)(2)(ii)	☐ 50.36(c)(1)(ii)(A)	☒ 50.73(a)(2)(iv)(A)	☐ 50.73(a)(2)(x)
☐ 20.2203(a)(2)(iii)	☐ 50.36(c)(2)	☐ 50.73(a)(2)(v)(A)	☐ 73.71(a)(4)
☐ 20.2203(a)(2)(iv)	☐ 50.46(a)(3)(ii)	☐ 50.73(a)(2)(v)(B)	☐ 73.71(a)(5)
☐ 20.2203(a)(2)(v)	☐ 50.73(a)(2)(i)(A)	☐ 50.73(a)(2)(v)(C)	☐ OTHER
☐ 20.2203(a)(2)(vi)	☐ 50.73(a)(2)(i)(B)	☐ 50.73(a)(2)(v)(D)	Specify in Abstract below or in NRC Form 366A

12. LICENSEE CONTACT FOR THIS LER

FACILITY NAME	TELEPHONE NUMBER (Include Area Code)
Grand Gulf Nuclear Station - Michael J. Larson, Acting Licensing Manager	601-437-6685

13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT

CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX
X	EL	86	ABB	Y					

14. SUPPLEMENTAL REPORT EXPECTED		15. EXPECTED SUBMISSION DATE	MONTH	DAY	YEAR
☐ YES *(If yes, complete 15. EXPECTED SUBMISSION DATE)*	☒ NO				

ABSTRACT *(Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines)*

On March 21, 2008 at 1525 hours Grand Gulf Nuclear Station experienced an actuation of the Reactor Protection System (RPS) which resulted in an automatic reactor shutdown (scram) from 100 percent power. The scram was due to main turbine control valve fast closure following a main generator trip caused by "C" phase unit differential lockout. There were no inoperable structures, systems, or components at the start of this event that contributed to the event. The normal heat sink (main condenser) remained available. All control rods fully inserted and all safety systems functioned as designed.

The minimum reactor water level recorded during this event was -8.2 inches wide range. The level for initiation of Emergency Core Cooling Systems (ECCS) is -41.6 inches, therefore no ECCS initiation occurred. Six safety relief valves (SRVs) lifted momentarily and then closed at the onset of the event. After SRV closure, reactor pressure was controlled with the main turbine bypass valves and reactor level was maintained the entire time using normal condensate and feedwater.

The cause of the event was a main generator trip as the result of a "C" phase unit differential lockout. Troubleshooting which included inspection of the high voltage circuit and check of calibration of both the "A" and "B" relays was initiated; however, no definitive cause for the trip was identified. As a precaution, the suspect "C" phase unit different relay was replaced.

A. REPORTABLE OCCURRENCE

On March 21, 2008 at 1525 hours Grand Gulf Nuclear Station experienced an automatic reactor shutdown (scram) from 100 percent power due to a main generator trip caused by a "C" phase unit differential lockout. The main generator trip resulted in a main turbine control valve fast closure which initiated the reactor protection system (RPS) and resulted in the automatic reactor shutdown. The initiation of RPS resulting in an automatic reactor scram is reportable pursuant to 10 CFR 50.73(a)(2)(iv)(A).

B. INITIAL CONDITIONS

At the time of the event, the reactor was in OPERATIONAL MODE 1 with reactor power at approximately 100 percent. There were no additional inoperable structures, systems, or components at the start of the event that contributed to the event.

C. DESCRIPTION OF OCCURRENCE

On March 21, 2008 at 1525 hours Grand Gulf Nuclear Station was in Mode 1 operating at 100 percent power when the main generator [TB] tripped. The main generator trip initiates a main turbine control valve (TCV) fast closure which in turn resulted in a RPS full automatic reactor scram. All control rods fully inserted into the core and all other systems performed as designed.

The minimum reactor water level recorded during this event was -8.2 inches wide range therefore no Emergency Core Cooling System (ECCS) initiation occurred (ECCS initiation is at -41.6 inches). Six safety relief valves (SRV) lifted momentarily and then closed at the onset of the event. After SRV closure, reactor pressure was controlled with the main turbine bypass valves and reactor level was maintained the entire time using normal condensate and feedwater. This was not a scram with complications.

D. CAUSE of OCCURRENCE

Indications are that the main generator trip was the result of a "C" phase unit differential lockout. No definitive cause for the "C" phase unit differential lockout was identified. Three potential causes were identified. The first is possible failure of the current transformers (CTs) associated with the "C" phase unit differential scheme. The second is a possible internal problem with the "C" phase unit differential relay. And the third is intermittent CT secondary circuit problem (wiring and terminations).

E. CORRECTIVE ACTIONS

Immediate Corrective Actions –. As a result of trouble shooting the following immediate corrective actions were taken. The Low voltage CT circuit wiring and terminations were inspected to the extent possible. The Main Generator Neutral bushing "C" phase CT in the circuit had been replaced in the previous refuel outage, however, as a precaution, another CT was wired into the circuit. As a precaution, the suspect "C" phase unit differential relay was replaced. An inspection of the high voltage circuit was also conducted as part of troubleshooting. No evidence of an actual fault condition was found. No evidence of animal intrusion in the high voltage bus work was found. Additionally, the calibration of the "A" and "B" relays was checked and found to be acceptable.

Long Term Corrective Actions - Condition Report GGN-2008-01476 was written and will address any additional actions.

F. SAFETY ASSESSMENT

Immediate actions performed by operators were adequate and appropriate in placing and maintaining the reactor in a safe shutdown condition. No margin of safety was affected or encroached. All safety systems responded as designed in this event.

The reactor water level did not reach Level 2 (-41.6 inches), therefore no Emergency Core Cooling System (ECCS) initiations occurred. The Group 2 and 3 Primary Containment Isolation initiated at Level 3 (+11.4 inches) however no valves changed position because these valves were already in the normal closed position. The Group 2 and 3 isolations were for valves in the same system (Residual Heat Removal system). Six safety relief valves opened momentarily then reclosed at the onset of this event to control reactor pressure. Reactor pressure was controlled with the main turbine bypass valves thereafter and reactor level was controlled with normal condensate and feedwater. The normal heat sink (main condenser) remained available during this event, therefore this was not a scram with loss of heat sink.

The event did not prevent the fulfillment of a safety function therefore it was not a safety system functional failure. Based on the discussion provided, the health and safety of the public was not compromised by this event.

G. ADDITIONAL INFORMATION

Previous Similar Events - Pursuant to 10CFR50.73(b)(5) a review was conducted to determine whether this was an infrequent event. There has not been any occurrence of the same underlying concern in the past two years at Grand Gulf Nuclear Station.