Entergy

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GNRO-2008/00075

December 15, 2008

U.S. Nuclear Regulatory Commission

Attn: Document Control Desk
Washington, DC 20555-0001

Subject: LER 2008-005-00 - Automatic Reactor Scram Due to Turbine Control Valve Fast Closure Caused by an Electrical Generator Trip

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

Dear Sir or Madam:

Attached is Licensee Event Report (LER) 2008-005-00 which is a final report.

This letter does not contain any commitments.

Yours truly,

Michael J. Larson
Acting-Manager, Licensing

MJL
attachment: LER 2008-005-00
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
Arlington, TX 76011-4005

U. S. Nuclear Regulatory Commission
ATTN: Mr. Carl F. Lyon, NRR/ADRO/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 Automatic Reactor Scram Due to Turbine Control Valve Fast Closure Caused by an Electrical Generator Trip

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
10	26	2008	2008	- 005 -	00	12	15	2008	FACILITY NAME: N/A	DOCKET NUMBER: N/A

9. OPERATING MODE

1

10. POWER LEVEL

050

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

- ☐ 20.2201(b)
- ☐ 20.2201(d)
- ☐ 20.2203(a)(1)
- ☐ 20.2203(a)(2)(i)
- ☐ 20.2203(a)(2)(ii)
- ☐ 20.2203(a)(2)(iii)
- ☐ 20.2203(a)(2)(iv)
- ☐ 20.2203(a)(2)(v)
- ☐ 20.2203(a)(2)(vi)
- ☐ 20.2203(a)(3)(i)
- ☐ 20.2203(a)(3)(ii)
- ☐ 20.2203(a)(4)
- ☐ 50.36(c)(1)(i)(A)
- ☐ 50.36(c)(1)(ii)(A)
- ☐ 50.36(c)(2)
- ☐ 50.46(a)(3)(ii)
- ☐ 50.73(a)(2)(i)(A)
- ☐ 50.73(a)(2)(i)(B)
- ☐ 50.73(a)(2)(i)(C)
- ☐ 50.73(a)(2)(ii)(A)
- ☐ 50.73(a)(2)(ii)(B)
- ☐ 50.73(a)(2)(iii)
- ☒ 50.73(a)(2)(iv)(A)
- ☐ 50.73(a)(2)(v)(A)
- ☐ 50.73(a)(2)(v)(B)
- ☐ 50.73(a)(2)(v)(C)
- ☐ 50.73(a)(2)(v)(D)
- ☐ 50.73(a)(2)(vii)
- ☐ 50.73(a)(2)(viii)(A)
- ☐ 50.73(a)(2)(viii)(B)
- ☐ 50.73(a)(2)(ix)(A)
- ☐ 50.73(a)(2)(x)
- ☐ 73.71(a)(4)
- ☐ 73.71(a)(5)
- ☐ OTHER

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
E	EL	EC	SIEMENS	Y					

14. SUPPLEMENTAL REPORT EXPECTED

☐ YES *(If yes, complete 15. EXPECTED SUBMISSION DATE)* ☒ NO

15. EXPECTED SUBMISSION DATE

MONTH	DAY	YEAR

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

On October 26, 2008 at 1125, Grand Gulf Nuclear Station was in Mode 1 operating at approximately 50 percent power when an automatic reactor scram was initiated by the Reactor Protection System (RPS) on detection of fast closure of the Turbine Control Valves (TCVs). After the scram reactor water level decreased to -2.67 inches and was maintained with the reactor feedwater system. There were no inoperable structures, systems, or components at the start of the event that contributed to the event. The normal heat sink (main condenser) remained available and no Main Steam Safety Relief Valves actuations occurred during the event. All control rods fully inserted and all safety systems functioned as designed and responded properly.

The cause of this event was due to the Main Generator Thyristor Voltage Regulator (TVR transferring from automatic control to manual control resulting in an unexpected under excited condition which tripped the main generator which then caused a fast closure of the TCV. It was determined that the TVR card manual reference setter was not tracking the automatic reference setter due to a defective manual reference setter motor operated potentiometer (MOP).

The root cause of this event was determined to be lack of a preventive maintenance (PM) strategy for the TVR control system to ensure reliability of the voltage control circuits

A. REPORTABLE OCCURRENCE

On October 26, 2008 at 1125, Grand Gulf Nuclear Station was in Mode 1 operating at approximately 50 percent power when an automatic reactor scram was initiated by the Reactor Protection System (RPS) [JC] on detection of fast closure of the Main Turbine Control Valves (TCVs). After the scram reactor water level decreased to - 2.67 inches and was maintained with the reactor feedwater system [SJ]. The following occurrences were considered reportable:

- Automatic actuation of Reactor Protection System (RPS) [JC]Automatic Scram (Reference: 10CFR50.73(a)(2)(iv) (A) & (B)(1))

Notification was made to the NRC's Emergency Notification System (ENS) reporting this condition pursuant to 10CFR50.72(b)(2)(iv)(B) and 10CFR50.72(b)(3)(iv)(A) and this event is reported under 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 50 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 October 26, 2008 at 1125 hours, Grand Gulf Nuclear Station was in Mode 1 operating at approximately 50 percent power when a reactor scram was initiated by the Reactor Protection System (RPS) on detection of fast closure of the Main Turbine Control Valves (TCVs). The fast closure of the TCVs was the result of a Main Generator [TB] trip caused by a generator loss of field condition. The loss of field occurred when the Thyristor Voltage Regulator (TVR) transferred from automatic to a failed manual controller.

After the scram reactor level decreased due to shrinkage to a level of - 2.67 inches. Water level in the Reactor Pressure Vessel (RPV) was maintained by Reactor Feed Pump Turbine (RFPT) "A" using startup level control. Since reactor feedwater was available, this was not a SCRAM with complications. The normal heat sink (main condenser) remained available after the scram.

All control rods fully inserted to position 00. All safety systems performed as designed, there were no Emergency Core Cooling System (ECCS) [BJ, BO] actuations, no vessel isolation (Main Steam Isolation Valves remained open), and no Safety/Relief Valves (SRVs) lifted. There were no radiological or industrial safety impacts as a result of this scram.

D. CAUSE of OCCURRENCE

The cause of this event was due to the Main Generator Thyristor Voltage Regulator (TVR) transferring from automatic control to manual control resulting in an unexpected under excited condition which tripped the main generator. It was determined that the TVR card manual reference setter was not tracking the automatic reference setter due to a defective manual reference setter motor operated potentiometer (MOP).

The root cause of this event was determined to be lack of a preventive maintenance (PM) strategy for the TVR control system to ensure reliability of the voltage control circuits.

E. CORRECTIVE ACTIONS

Immediate Corrective Actions – The manual reference setter motor operated potentiometer for the TVR was replaced and verified to operate properly.

Long Term Corrective Actions - Condition Report GGN-2008-6241 was written and will address any additional actions.

F. SAFETY ASSESSMENT

Immediate actions performed by the Operations staff were adequate and appropriate in placing and maintaining the reactor in safe shutdown condition. No margin of safety was affected or encroached. All control rods fully inserted to position 00. All safety systems performed as designed, there were no Emergency Core Cooling System (ECCS) actuations, no vessel isolation (MSIV's remained open), and no Safety/Relief Valves (SRVs) lifted. There were no radiological or industrial safety impacts as a result of this scram.

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 isolated position. The Group 2 and 3 isolations were for valves in the same system (Residual Heat Removal).

No damage occurred as a result of the turbine trip and all equipment responses were as designed and expected.

This event did not prevent the fulfillment of a safety function therefore there were no safety system functional failures. Based on the discussion provided, the health and safety of the public was not compromised by this event.SQDF

G. ADDITIONAL INFORMATION

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