



Entergy Operations, Inc.
Waterloo Road
P.O. Box 756
Port Gibson, MS 39150
Tel 601 437 6299

Charles A. Bottemiller
Manager
Plant Licensing

GNRO-2005/00036

June 27, 2005

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555-0001

Subject: LER -2005-002-00 [Incorrect Assumption Used In Development Of Air
Operated Valve Program]

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

Dear Sir or Madam:

Attached is Licensee Event Report (LER) 2005-002-00 which is a final report.

This letter does not contain any commitments.

Yours truly,

A handwritten signature in black ink, appearing to be "CA" followed by a long, sweeping horizontal stroke.

CAB/JEO
attachment: LER 2005-002-00
cc: (See Next Page)

GNRO-2005/00036

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

U. S. Nuclear Regulatory Commission
ATTN: Dr. Bruce S. Mallet (w/2)
Regional Administrator, Region IV
611 Ryan Plaza Drive, Suite 400
Arlington, TX 76011-4005

U. S. Nuclear Regulatory Commission
ATTN: Mr. Bhalchandra Vaidya, NRR/DLPM (w/2)
ATTN: ADDRESSEE ONLY
ATTN: U. S. Postal Delivery Address Only
Mail Stop OWFN/7D-1
Washington, DC 20555-0001

Mr. D. E. Levanway (Wise Carter)
Mr. L. J. Smith (Wise Carter)
Mr. N. S. Reynolds
Mr. J. N. Compton

LICENSEE EVENT REPORT (LER)

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

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.

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4. TITLE
Incorrect Assumption Used In Development Of Air Operated Valve Program

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
04	27	2005	2005	- 002 -	00	06	27	2005	N/A	N/A
									FACILITY NAME	DOCKET NUMBER
									N/A	N/A

9. OPERATING MODE 1	11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR§: (Check all that apply)									
10. POWER LEVEL 100	<input type="checkbox"/> 20.2201(b)	<input type="checkbox"/> 20.2203(a)(3)(i)	<input type="checkbox"/> 50.73(a)(2)(i)(C)	<input type="checkbox"/> 50.73(a)(2)(vii)						
	<input type="checkbox"/> 20.2201(d)	<input type="checkbox"/> 20.2203(a)(3)(ii)	<input type="checkbox"/> 50.73(a)(2)(ii)(A)	<input type="checkbox"/> 50.73(a)(2)(viii)(A)						
	<input type="checkbox"/> 20.2203(a)(1)	<input type="checkbox"/> 20.2203(a)(4)	<input type="checkbox"/> 50.73(a)(2)(ii)(B)	<input type="checkbox"/> 50.73(a)(2)(viii)(B)						
	<input type="checkbox"/> 20.2203(a)(2)(i)	<input type="checkbox"/> 50.36(c)(1)(i)(A)	<input type="checkbox"/> 50.73(a)(2)(iii)	<input type="checkbox"/> 50.73(a)(2)(ix)(A)						
	<input type="checkbox"/> 20.2203(a)(2)(ii)	<input checked="" type="checkbox"/> 50.36(c)(1)(ii)(A)	<input type="checkbox"/> 50.73(a)(2)(iv)(A)	<input type="checkbox"/> 50.73(a)(2)(x)						
	<input type="checkbox"/> 20.2203(a)(2)(iii)	<input type="checkbox"/> 50.36(c)(2)	<input type="checkbox"/> 50.73(a)(2)(v)(A)	<input type="checkbox"/> 73.71(a)(4)						
	<input type="checkbox"/> 20.2203(a)(2)(iv)	<input type="checkbox"/> 50.46(a)(3)(ii)	<input type="checkbox"/> 50.73(a)(2)(v)(B)	<input type="checkbox"/> 73.71(a)(5)						
<input type="checkbox"/> 20.2203(a)(2)(v)	<input type="checkbox"/> 50.73(a)(2)(i)(A)	<input type="checkbox"/> 50.73(a)(2)(v)(C)	<input type="checkbox"/> OTHER							
<input type="checkbox"/> 20.2203(a)(2)(vi)	<input type="checkbox"/> 50.73(a)(2)(i)(B)	<input checked="" type="checkbox"/> 50.73(a)(2)(v)(D)	Specify in Abstract below or in NRC Form 366A							

12. LICENSEE CONTACT FOR THIS LER

FACILITY NAME Grand Gulf Nuclear Station - James Owens, Senior Licensing Specialist	TELEPHONE NUMBER (Include Area Code) 601-437-6219
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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

14. SUPPLEMENTAL REPORT EXPECTED				15. EXPECTED SUBMISSION DATE		
<input type="checkbox"/> YES (If yes, complete 15. EXPECTED SUBMISSION DATE) <input checked="" type="checkbox"/> NO				MONTH	DAY	YEAR

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

On April 28 and 29, 2005 Grand Gulf Nuclear Station made eight hour non-emergency calls (EN#s 41645 and 41650) to the NRC pursuant to 10 CFR 50.72(b)(3)(v)(D), Accident Mitigation. The calls were the result of discovery that original assumptions used in development of the Air Operated Valve (AOV) program did not consider instantaneous loss of the non safety related Instrument Air system. Failure to include loss of Instrument Air in the original assumptions produced negative margin for secondary containment isolation valve (SCIV) closure under some postulated accident conditions. All of the affected valves are flex wedge gate valves equipped with double acting Ralph A. Hiller Company actuators. It was determined that the actuator mounted accumulators would not provide sufficient air pressure to ensure positive closure of these SCIVs against postulated maximum expected differential pressure (MEDP) concurrent with loss of the Instrument Air system. A detailed review of all AOV primary and secondary containment isolation valves equipped with Ralph A. Hiller actuators was performed. The majority of the valves were determined to be operable or operable but degraded. The small number of valves that were determined to be inoperable were placed in their Technical Specification required closed position.

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A. REPORTABLE OCCURRENCE

On April 28 and 29, 2005 Grand Gulf Nuclear Station made eight hour non-emergency calls (EN#s 41645 and 41650) to the NRC pursuant to 10 CFR 50.72(b)(3)(v)(D), Accident Mitigation. The calls were the result of discovery that original assumptions used in development of the Air Operated Valve (AOV) program did not consider instantaneous loss of the non safety related Instrument Air [LD] system. Failure to include loss of Instrument Air in the original assumptions produced negative margin for secondary containment isolation valve (SCIV) closure under some postulated accident conditions. The subject valves were on the Main Steam Line [SB] drain line (1B21F113 and F114) and Reactor Core Isolation Cooling [BN] (RCIC) full flow test line (1P11F064 and F065). Also affected was the Residual Heat Removal (RHR) "C" connection to the Suppression Pool Cleanup System (SPCU) [CG] (1P60F001 and F021). However, this mode of RHR "C" has not been used in the past three years. In order to provide additional control of this line, valves 1P60F001 and F021 were administratively controlled closed.

Based on a thorough evaluation performed as part of the immediate actions the Main Steam Line drain valves were determined to have been operable. Only the RCIC full flow test line valves (1P11F064 and F065) and the suppression pool cleanup valves (1P60F001 and F021) to RHR "C" were determined to be inoperable when these functions are in service. All of the affected valves are flex wedge gate valves equipped with double acting Ralph A. Hiller Company actuators. It was determined that the actuator mounted accumulators would not provide sufficient air pressure to ensure positive closure of these SCIVs against postulated maximum expected differential pressure (MEDP) concurrent with loss of the Instrument Air system.

See the table in section "G", Additional Information, for a listing of operable but degraded and inoperable valves.

Based on the determination that certain SCIVs could not be assured to fully close in the event of loss of the Instrument Air system, this Licensee Event Report is submitted pursuant to 10 CFR 50.73(a)(2)(v)(D). This condition did constitute a safety system functional failure due to loss of function of Secondary Containment (accident mitigating system) caused by inoperable SCIVs.

B. INITIAL CONDITIONS

At the time of the event, the reactor was in OPERATIONAL MODE 1 with reactor power at approximately 100 percent. Moderator temperature, reactor pressure vessel (RPV) pressure, and RPV water level were at approximately 529 degrees F, 1033 PSIG, and 36 inches, respectively.

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C. DESCRIPTION OF OCCURRENCE

On April 28, 2005 Grand Gulf Nuclear Station discovered that an assumption used in development of the AOV program resulted in negative safety margin. It was discovered that the actuator mounted accumulators would not provide sufficient air pressure to ensure positive closure of a certain population of Ralph A. Hiller Company actuator equipped flex wedge gate valves upon failure of the non safety related Instrument Air system. Based on engineering evaluation it appears that the SCIVs on the Main Steam Line drain lines may not positively close under all postulated conditions. Further evaluation determined on April 29, 2005 that valves on the RCIC full flow test return line to the Condensate Storage Tank were also affected. This evaluation is based on 'worst case' assumptions for parameters such as air pressure to the valve actuator and maximum expected differential pressure MEDP across the valve.

Loss of Instrument Air would require that these AOVs perform their safety-function to close on valve accumulator pressure only. A population of these AOVs currently exist that do not have enough margin to overcome the currently calculated MEDP. This population of AOVs therefore cannot be relied upon to perform their design basis function under certain design accident conditions. Operability for the entire population of negative margin Primary Containment Isolation Valves (PCIV) and SCIVs equipped with Ralph A. Hiller actuators was evaluated. The majority of the valves were determined to be operable (including those on the Main Steam Line drain lines), or operable but degraded and Generic Letter 91-18 criteria applied. The remaining small subset of valves affects the RCIC full flow test line (1P11F064 and F065) and the RHR "C" connection to the SPCU system (1P60F001 and F021). The RCIC system is affected because RCIC is not isolated from the Condensate Storage Tank on the high drywell pressure loss of coolant accident signal. Though the emergency SPCU mode of RHR "C" is affected, this particular mode of RHR "C" has not been used in the past three years. In order to provide additional control of this line, valves 1P60F001 and F021 were administratively controlled closed. Valves determined to be inoperable were closed per the Technical Specification (TS) action statement 3.6.4.2.B. Additionally, standing orders were issued to provide guidance for the operators concerning these conditions.

D. APPARENT CAUSE

The assumption which credited the non-safety related Instrument Air system as the primary source of air to operate the Ralph A. Hiller Company actuator equipped PCIVs and SCIVs during a design basis event is inconsistent with regulatory design documentation. This assumption was used in the calculations upon which the thrust capability of the subject valve actuators in the Grand Gulf AOV Program were developed. The assumption that non-safety related Instrument Air system could be credited for AOV closure was incorrect.

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E. CORRECTIVE ACTIONS

Immediate Corrective Actions – Initiated Condition Reports CR-GGN-2005-01568, CR-GGN-2005-01667, CR-GGN-2005-01681, and CR-GGN-2005-01815.

Long Term Corrective Actions – Condition Report CR-GGN-2005-01568 was issued.

F. SAFETY ASSESSMENT

Condition report CR-GGN-2005-01568 outlines component status and recovery plan for the affected valves. The Suppression Pool Cleanup Emergency Mode of RHR has not been used in the past three years. However, to provide additional control, the 1P60F001 and F021 valves were administratively controlled closed and information communicated to all operators in standing orders to maintain these valves closed to prevent operation of RHR in SPCU Emergency Mode. The RCIC full flow isolation 1E51F022 does not isolate on high drywell pressure unlike High Pressure Core Spray (HPCS). However the RCIC system was only in this configuration approximately eight hours per year. Therefore this operation did not present a significant increase in risk.

G. ADDITIONAL INFORMATION

The following table lists the inoperable and operable but degraded valves.

VALVE	CONDITION	COMMENTS
1P11F064	Inoperable	Valve isolated and administrative controls implemented
1P11F065	Inoperable	Valve isolated and administrative controls implemented
1P60F003	Operable but Degraded	Administrative controls and MEDP adjusted
1P60F004	Operable but Degraded	Administrative controls and MEDP adjusted
1P60F007	Operable but Degraded	Administrative controls and MEDP adjusted
1P60F008	Operable but Degraded	Administrative controls and MEDP adjusted
1P60F009	Operable but Degraded	Administrative controls and MEDP adjusted
1P60F010	Operable but Degraded	Administrative controls and MEDP adjusted
1P60F001	Inoperable	Valve isolated and administrative controls implemented
1P60F021	Inoperable	Valve isolated and administrative controls implemented