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April 24, 1996

U.S. Nuclear Regulatory Commission
Mail Station P1-137
Washington, D.C. 20555

Attention: Document Control Desk

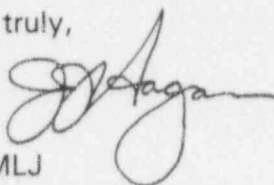
SUBJECT: Grand Gulf Nuclear Station, Unit 1
Docket No. 50-416
License No. NPF-29
Reactor Water Cleanup System Isolation Due to High Differential Flow
LER 96-003-00

GNRO-96/00049

Gentlemen:

Attached is Licensee Event Report (LER) 96-003 which is a final report.

Yours truly,

 for C.R. Hutchinson

CRH/MLJ
attachment

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NRC FORM 366 (4-95)		U.S. NUCLEAR REGULATORY COMMISSION				APPROVED BY OMB NO. 3150-0104 EXPIRES 04/30/98				
LICENSEE EVENT REPORT (LER)						ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS MANDATORY INFORMATION COLLECTION REQUEST: 50.0 HRS. REPORTED LESSONS LEARNED ARE INCORPORATED INTO THE LICENSING PROCESS AND FED BACK TO INDUSTRY. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (T-6 F33), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.				
FACILITY NAME (1) Grand Gulf Nuclear Station, Unit 1						DOCKET NUMBER (2) 05000-416		PAGE (3) 1 of 4		
TITLE (4) Reactor Water Cleanup System Isolation Due to High Differential Flow										
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 NAME	DOCKET NUMBER
03	27	96	96	003	00	04	24	96	N/A	05000
									FACILITY NAME	DOCKET NUMBER
									N/A	05000
OPERATING MODE (9)		THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR § (Check one or more, (11))								
1		20.2201(b)		20.2203(a)(2)(v)		50.73(a)(2)(i)		50.73(a)(2)(viii)		
POWER LEVEL (10)		20.2203(a)(2)(i)		20.2203(a)(3)(i)		50.73(a)(2)(ii)		50.73(a)(2)(x)		
100		20.405(a)(1)(ii)		20.2203(a)(3)(ii)		50.73(a)(2)(iii)		73.71		
		20.2203(a)(2)(ii)		20.2203(a)(4)		X 50.73(a)(2)(iv)		OTHER		
		20.2203(a)(2)(iii)		50.36(c)(1)		50.73(a)(2)(v)		Specify in Abstract below or in NRC Form 366A		
		20.2203(a)(2)(iv)		50.36(c)(2)		50.73(a)(2)(vii)				
LICENSEE CONTACT FOR THIS LER (12)										
NAME Milton L. Jones / Licensing Specialist						TELEPHONE NUMBER (include Area Code) 601-437-6198				
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	
SUPPLEMENTAL REPORT EXPECTED (14)						EXPECTED SUBMISSION DATE (15)		MONTH	DAY	YEAR
YES (If yes, complete EXPECTED SUBMISSION DATE)				X	NO					
ABSTRACT (Limit to 1400 spaces, i. e., approximately 15 single-spaced typewritten lines) (16)										
<p>On March 27, 1996, the RWCU "B" filter was removed from service to perform scheduled maintenance on the actuators of G36-F007B and G36-F008B. While performing a red tag clearance to isolate the filter/demineralizer (F/D), an isolation signal was received and the RWCU system isolated.</p> <p>The F/D had been removed from service and backwashed. Operations and maintenance personnel were in the process of closing air supplies to air operated valves and installing gags to ensure the valves remained closed.</p> <p>Root cause investigation determined that the design of the filter/demineralizer valves does not provide adequate isolation capability for maintenance activities. In addition, actions required to effectively gag the valves during system maintenance activities were not proceduralized in sufficient detail. Long term actions were not followed up adequately. Actions are being taken to address these causal factors.</p> <p>During the event all RWCU isolations functioned as designed. Therefore, this event did not pose a threat to the health and safety of the public.</p> <p>This report is being submitted pursuant to 10 CFR 50.73(a)(2)(iv).</p>										

NRC FORM 366A
(4-95)

U.S. NUCLEAR REGULATORY COMMISSION

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Grand Gulf Nuclear Station, Unit 1	05000-416	96	003	00	2 OF 4

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

A. Reportable Occurrence

On March 27, 1996, GGNS experienced an isolation of the Reactor Water Cleanup System (RWCU) [CE]. Because this was a valid actuation of an engineered safety feature, this report is being submitted pursuant to 10 CFR 50.73(a)(2)(iv).

B. Initial Conditions

The plant was in OPERATIONAL CONDITION 1 with reactor power indicating approximately 100 percent. Reactor water level was approximately 36 inches, and reactor pressure was approximately 1033 psig.

C. Description of Occurrence

In preparation for an RWCU outage, RWCU filter/demineralizer (F/D) "B" was removed from service and backwashed on March 27, 1996. A red tag clearance was being performed to isolate the F/D for maintenance on valves G36-F008B and G36-F007B.

The F/D's holding pump had been stopped and its breaker tagged out as required by the clearance instructions. Following tagging out the holding pump suction valve and the filter outlet valve, plant personnel went to the RWCU valve nest room to tag out the appropriate valves in that room. The air supply was then closed to those valves (G36-F002B, G36-F005B, G36-F001B, G36-F008A, and G36-F004B). The operator and mechanic gagged valve G36-F002B. While the mechanic started gagging valve G36-F005B, the operator began bleeding air off the G36-F001B to save time and for ALARA purposes. As the air was bled off, the operator noticed G36-F001B begin to open. The operator secured the bleeding of air and the valve stopped opening. G36-F001B slowly moved back in the closed direction. The operator was not sure if the valve was completely closed since air had been secured to the valve.

At approximately this time, the RWCU Delta Flow Hi annunciator alarmed in the control room. This annunciator alarms when a delta flow of 79 gpm between the inlet flow to the RWCU system and the return flow back to the vessel is obtained. This started a 45 second bypass timer that bypasses the isolation trip function. The delta flow signal remained in for the 45 seconds and a group eight isolation occurred. Subsequent investigation concluded that an additional flowpath to the RWCU Backwash Receiving tank had been established via the G36-F007A and G36-F008A valves and either a relief valve, PSVF085, that is routed to the RWCU Backwash Receiving tank or the G36-F007B and G36-F008B, to the RWCU Backwash Receiving tank.

Previous Events

A previous RWCU isolation (LER 95-003) occurred on March 3, 1995, during backwashing of RWCU F/D "B". Upon initiation of the backwash cycle, a reverse flow condition was experienced. The reverse flow was through the F/D discharge isolation valves, 1G36-F003B and F004B. This event was dissimilar in that the reverse flow condition occurred during a normal backwash evolution. The path for the reverse flow was to the Backwash Receiving Tank, and led to the RWCU isolation signal on differential flow. No root cause for this previous event was able to be determined since the event could not be duplicated.

A precursor event without RWCU isolation occurred in the fall of 1991 as a result of the same type valves leaking by. This repressurization event occurred while one RWCU filter/demineralizer was isolated and tagged out for maintenance. As a result, a nonconformance report was initiated. Short term corrective action changed the protective tagging procedure. The change required that valves in the RWCU F/D

NRC FORM 366A
(4-95)

U.S. NUCLEAR REGULATORY COMMISSION

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Grand Gulf Nuclear Station, Unit 1	05000-416	96	003	00	3 OF 4

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

system that fail closed on loss of air be bolt gagged. Although procedurally required, the specific sequence of steps to perform the gagging was not adequately detailed. Due to personnel safety considerations, the gagging methodology to be used was not considered suitable for long term use. The long term corrective action included consideration of design changes to the valve actuators. During consideration of alternatives, the site Change Review Board (CRB) disposition of one design approach inadvertently resulted in failure to complete long term corrective action.

D. Apparent Cause

Initial investigation by on-shift operations personnel indicated that the delta flow signal was a result of reactor water being diverted through the in service "A" F/D. Subsequent investigation concluded that an additional flowpath to the RWCU Backwash Receiving tank had been established when air was isolated via the G36-F007A and G36-F008A valves and either a relief valve, PSVF085, that is routed to the RWCU Backwash Receiving tank or the G36-F007B and G36-F008B, which had previously leaked by, to the RWCU Backwash Receiving tank. This created the delta flow of greater than or equal to 79 gpm and resulted in the isolation.

Root cause investigation determined that the design of the valves does not provide adequate isolation capability for maintenance activities. Since the valves are not designed to remain closed after the air is removed, the valves cannot be assured to remain closed after the air supply is removed because spring pressure alone is not adequate.

Less than adequate written communications (omission of relevant information) was a contributing cause. The change to the protective tagging system procedure, stated that certain valves shall be bolt gagged when the system pressure boundary was required during plant operations. However, the bolt gagging required a specific sequence of actions to assure that the air operated valve was seated when air was secured. The details of this process were not provided in the procedure. In addition, the intended practice was to remove both filters from service when performing maintenance that would breach the pressure boundary. This intended requirement was not proceduralized.

Management methods was a contributing cause in that long term corrective action for a known problem was not completed following CRB disposition of a particular alternative.

E. Corrective Actions

Immediate action was taken to restore the RWCU system to operation on March 27, 1996.

The following corrective actions are planned.

1. A nonconformance document has been initiated to document the inadequate design and installation of the G36 system valves. Specific corrective actions will be addressed by the nonconformance document.
2. The desired method of tagging out an RWCU F/D will be included in the protective tagging system procedure or a temporary directive to be issued to address the desired methods of F/D removal from service and isolation for maintenance.

NRC FORM 366A
(4-95)

U.S. NUCLEAR REGULATORY COMMISSION

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		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Grand Gulf Nuclear Station, Unit 1	05000-416	96	003	00	4 OF 4

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

3. Management will reinforce the expectation that systems engineers will champion any problem detected within their systems.
4. Entergy will study the Change Review Board (CRB) review process to determine adequacy of prioritization and documentation of reasons for actions recommended by the CRB.

F. Safety Assessment

The primary safety function of the RWCU system is to ensure system integrity while maintaining reactor water quality through filtration and demineralization. This is accomplished by providing positive isolation of the RWCU system to ensure reactor and containment boundaries. During this event all RWCU isolations functioned as designed. Therefore, this event did not pose a threat to the health and safety of the general public.

G. Additional Information

Energy Industry Identification System (EIIIS) codes are identified in the text within brackets [].