



**ENTERGY**

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Grand Gulf Nuclear Station

December 9, 1994

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  
Reply To A Notice Of Violation  
For DIV I Diesel Generator Fuel Rack Linkage Bolt  
Not Properly Tightened Prior to Work Order Closure  
Report No. 50-416/94-18, dated 11/14/94  
(GNRI-94/00249)

GNRO-94/00146

Gentlemen:

Entergy Operations, Inc. hereby submits the response to the Notice of Violation 50-416/94-18-01.

This violation involved Emergency Diesel Generator fuel rack linkage bolts not tightened so as to adequately compress their associated lockwashers. This issue was previously an unresolved item on NRC Inspection Report No. 94-15. Subsequent work in response to this NRC Inspection item still resulted in a loose fuel rack linkage bolt.

We share your concern over the use of self-verification in addition to specifying appropriate instructions when performing activities which affect quality. As a result, we have conducted a detailed investigation to determine causal factors which allowed this breakdown during the performance of the subject work activities.

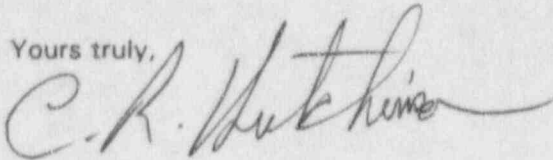
Our investigation revealed weaknesses which are being addressed in accordance with our corrective action process. Actions will be taken to eliminate recurring problems of this type.

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Please let me know if we can provide additional information regarding this violation.

Yours truly,



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### **Notice of Violation 94-18-01**

10 CFR 50 Appendix B, Criterion V, "Instructions, Procedures and Drawings", requires that activities affecting quality shall be accomplished in accordance with instructions and procedures. This is implemented with the GGNS Operational Quality Assurance Manual, Policy 5, Paragraph 5.5.2 which states that "directions commensurate with the nature of the activity shall be prescribed in instructions, procedures and/or drawings for the performance of activities affecting quality" and that "the activities shall then be performed in accordance with the instructions, procedures and/or drawings".

Contrary to the aforementioned procedural requirement, on August 16, 1994, work instructions to check the tightness of emergency diesel generator fuel rack linkage bolts were inadequate in that tightness requirements for the bolting was not specified. Bolts not configured in accordance with vendor drawings and bolts not tightened so as to compress the bolts associated lockwashers were identified during an NRC inspection and documented in NRC Inspection Report No. 94-15. Subsequent work in response to the inspection item still resulted in a loose fuel rack linkage bolt.

#### **I. Admission or Denial of the Alleged Violation**

Entergy Operations, Inc. admits to this violation.

#### **II. The Reason for the Violation, if Admitted**

On August 16, 1994, the site NRC inspectors were conducting a routine walkdown of the Division I and Division II Emergency Diesel Generators (EDG). Several fuel rack linkage bolts, on both EDG's were identified as being installed in reverse direction from other similar bolts. Further investigation by the inspectors revealed that these bolts were not installed in accordance with the vendor manual drawing. These bolts connect the fuel rack clamps to the adjustable rods used to control the position of the Fuel Injector Pumps on each cylinder, at the pivot point.

In addition to the reversed installation of the bolts, several fasteners associated with these bolts on the Division I and II EDG's were identified by the NRC as not being properly tightened as indicated by the lockwashers underneath the fasteners not being completely compressed.

The NRC inspectors notified the Control Room of these observations and Maintenance Work Orders (MWO's) were initiated the same day to correct the deficiency. The work instructions stated, "Check the bolting that hold the fuel injector rods to the fuel racks for tightness. Adjust as required. Take care not to over-tighten." System Engineering was also notified and a Material Nonconformance (MNCR) was initiated to evaluate the potential effect the bolts' orientation had on the operability of the applicable EDG's.

Work was completed on the MWOs on August 16, 1994 at 2130. However, on August 18, 1994, one of the NRC resident inspectors went back to the Division I EDG and observed that one of the linkage bolts was still loose. The NRC informed maintenance and the loose bolt was tightened and all of the bolts were checked on both divisions.

Originally, this event was attributed to inadequate work instructions and was cited as such in the notice of violation. However, a subsequent root cause analysis identified the cause of the event to be less than adequate work practices in the area of self verification. Mechanical Maintenance did not self-verify their work activities to ensure the identified fasteners connecting the fuel injector rods to the fuel racks were properly tightened. The mechanics were under the impression that the work order was written only to perform a routine check of a selected group of fasteners, when in reality the work order was in response to a concern identified with specific fasteners in that group. By checking the fasteners on Division I and Division II, they were able to increase the tightness of some of the fasteners. However, one of the bolts was overlooked and left loose as revealed by a subsequent inspection by the NRC resident.

Inadequate work instructions were determined to be a contributing factor. The work package did not state which specific bolt within the group of fasteners needed to be checked nor that a problem with bolt tightness had been identified with specific bolts. This information would have provided the mechanics with an additional method of self-verification to ensure that the fasteners are properly tightened.

### **III. Corrective Steps Which Have Been Taken and Results Achieved**

- All bolts were retightened per a Work Order. A subsequent inspection of Division I and Division II EDGs indicated no loose fasteners.
- A memo was issued to planners instructing that lockwasher compression and a check for binding will be included in instructions and verification will be performed when conducting maintenance on EDG fuel rack linkage bolting. This memo provides interim guidance until a long term solution is put into place via the corrective actions resolving Quality Deficiency Report (QDR) 206-94.
- Mechanical Maintenance personnel involved were counseled on the importance of self-verification.

### **IV. Corrective Steps to be Taken to Preclude Further Violations**

- QDR 206-94 was initiated to evaluate additional corrective steps to preclude further problems with EDG fuel rack maintenance involving the tightening of fuel rack linkage bolts.

### **V. Date When Full Compliance Will be Achieved**

- March 1, 1995