UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
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August 3, 2000

William A. Eaton, Vice President
Operations - Grand Gulf Nuclear Station
Entergy Operations, Inc.
P.O. Box 756
Port Gibson, Mississippi 39150

SUBJECT: GRAND GULF NUCLEAR STATION'S NRC SUPPLEMENTAL INSPECTION REPORT NO. 50-416/00-09

Dear Mr. Eaton:

On July 14, 2000, the NRC completed a supplemental inspection at the Grand Gulf Nuclear Station facility. The enclosed report presents the results of that inspection. The results were also discussed with Mr. J. Venable and other members of your staff in an exit meeting on July 13, 2000.

This inspection was an examination of activities conducted under your license as they relate to your handling of a change in performance as indicated by the safety system unavailability and ac power performance indicators.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at http://www.nrc.gov/NRC/ADAMS/index.html (the Public Electronic Reading Room).

Should you have any questions concerning this inspection, we will be pleased to discuss them with you.

Sincerely,

/RA/

Joseph I. Tapia, Chief
Project Branch A
Division of Reactor Projects

Docket No.: 50-416
License No.: NPF-29

Enclosures:
NRC Inspection Report No.
50-416/00-09

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ENCLOSURE

U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

Docket No.:	50-416
License No.:	NPF-29
Report No.:	50-416/00-09
Licensee:	Entergy Operations, Inc.
Facility:	Grand Gulf Nuclear Station
Location:	Waterloo Road Port Gibson, Mississippi 39150
Dates:	July 2 through July 14, 2000
Inspector:	Jennifer Dixon-Herrity, Senior Resident Inspector
Approved By:	Joseph I. Tapia, Chief, Project Branch A

ATTACHMENTS:

Attachment 1: Supplemental Information

Attachment 2: NRC's Revised Reactor Oversight Process

SUMMARY OF FINDINGS

Grand Gulf Nuclear Station
NRC Inspection Report No. 50-416/00-09

Cornerstone: Mitigating Systems

This supplemental inspection was performed by the NRC to address a change in performance indicated by the safety system unavailability and ac power performance indicator. This change was primarily due to the inoperability of the Division III diesel generator between July 9 and September 21, 1999. This performance issue was previously reviewed in NRC Special Inspection Report 50-416/99-19 and a Notice of Violation was issued on February 22, 2000. During this supplemental inspection performed in accordance with Inspection Procedure 95001, the inspectors determined that the licensee performed a comprehensive root cause evaluation. The diesel failed during a surveillance test as a result of extended operation without sufficient lubrication. The licensee identified the root causes to be: failure to document oil volume discrepancies between the controlled vendor drawing and the bearing nameplate in the corrective action program; failure to document problems with sight glass foaming during testing in the corrective action program; poorly defined engineering policy guidance and expectations, and a general lack of questioning attitude onsite in regard to the control of nameplate data and equipment oil levels.

Due to the licensee's acceptable performance in addressing this issue, white performance associated with the failure of the Division III diesel generator will only be considered in assessing plant performance for a total of four quarters in accordance with the guidance in IMC 0305, Operating Reactor Assessment Program.

Report Details

01 Inspection Scope

This supplemental inspection was performed by the NRC to address a change in performance indicated by the safety system unavailability ac power performance indicators. The change was primarily due to the inoperability of the Division III diesel generator between July 9 and September 21, 1999. This issue is related to the mitigating systems cornerstone and was previously reviewed in NRC Special Inspection Report 50-416/99-19. The Special Inspection resulted in a Notice of Violation being issued on February 22, 2000. As part of this inspection, the inspector reviewed the Significant Event Response Team Report, "High Pressure Core Spray Diesel Generator Bearing Failure," Licensee Event Report 99-004-01, and Condition Reports CR-GGN-1999-1054 and -1083.

02 Evaluation of Inspection Requirements

02.01 Problem Identification

a. Determine that the evaluation identifies who (i.e., licensee, self-revealing, or NRC), and under what conditions the issue was identified.

The Division III diesel generator bearing failed approximately 1 hour into a 24-hour load surveillance test.

b. Determine by the evaluation documents how long the issue existed and prior opportunities for identification.

The licensee determined that the diesel was inoperable from July 9, 1999, when the oil level in the bearing was lowered, to September 19, 1999, when the licensee declared the diesel functional following the replacement of the generator. The diesel was declared operable per the Technical Specifications on September 21, 1999. Prior opportunities for identification were addressed in the licensee's root cause evaluation.

c. Determine that the evaluation documents the plant-specific risk consequences (as applicable) and compliance concerns associated with the issue.

The licensee's evaluation assigned a core damage probability of 1.02E-5 to this condition with six time periods and a delta core damage probability of less than 1.0E-6 due to additional equipment being out of service for maintenance. The inspector reviewed the licensee's evaluation and assumptions and confirmed their validity. The licensee identified a violation of Technical Specification 3.8.1.A.2 in Licensee Event Report 1999-004-01.

02.02 Root Cause and Extent of Condition Evaluation

a. Determine that the problem was evaluated using a systematic method(s) to identify root cause(s) and contributing cause(s).

The licensee used a combination of root cause analysis techniques to evaluate the event including barrier, events, and causal factor analysis. The inspector determined

that the licensee followed applicable procedural guidance for performing the root cause analysis with one exception. As identified in NRC Inspection Report 50-416/99-19, two opportunities to prevent the failure were not specifically addressed in the licensee's evaluation report. The first dealt with the approval for implementation of the maintenance task and for the installation of an information tag stating a test was in process on the diesel by control room operators. The second opportunity was the modification of an instrument and controls work package for troubleshooting a different component to change the oil level in the bearing without thoroughly questioning or verifying the appropriateness of the change. Although the licensee was aware of these opportunities, they were not identified as failed barriers which could have prevented the event and no corrective actions were planned to address them.

The licensee's procedures required conducting interviews with key personnel and the preservation of evidence associated with the failure. The licensee successfully accomplished this by quarantining the diesel until formal troubleshooting controls could be established.

b. Determine that the root cause evaluation was conducted to a level of detail commensurate with the significance of the problem.

The licensee's root cause evaluation was thorough in identifying several root and contributing causes; however, as discussed above and in NRC Inspection Report 50-416/99-19, opportunities to preclude the failure that were not related to the root or contributing causes were not thoroughly addressed. The root causes identified were: (a) the failure of personnel to exhibit sufficient awareness of the impact of actions on safety (the system engineer was aware of a discrepancy between the controlled drawing and nameplate oil levels, but took no action to correct the problem), (b) the failure to address problems identified (questions were raised about foaming in the sight glass but were not adequately followed up on) and, (c) the failure of the system engineer to understand that changing the oil level was a configuration change. The contributing causes identified included: (a) the omission of relevant information from an alarm response instruction, (b) lack of discrete display for the bearing temperature, (c) inadequate design for the bearing thermistor (d) inadequate design documentation for the bearings and, (e) inadequate monitoring of the oil level change.

c. Determine that the root cause evaluation included a consideration of prior occurrences of the problem and knowledge of prior operating experience.

The licensee's evaluation included a review to see if similar problems had previously been reported with the diesel. The licensee identified three occurrences, one at Grand Gulf and two at other facilities, which could have prevented the diesel failure event. The licensee had revised the operator rounds to ensure that the oil level was monitored in response to a concern in 1995. The evaluation found that incorrect technical manual information about the oil level was previously not adequately addressed and potentially contributed to the failure of the bearing. The second event identified that all changes needed to be controlled by a process which would ensure their adequacy. The last example involved a finding that the amount of oil in the reactor core isolation cooling turbine oil system was not adequately controlled. In that case, the system engineer provided direction during completion of the task without adequate review of the

consequences. The corrective actions taken in response to the bearing event addressed each of these discrepancies.

d. Determine that the root cause evaluation included consideration of potential common cause(s) and extent of condition of the problem.

The licensee's evaluation considered the potential for common cause and extent of condition in regard to the control and use of nameplate data, the misunderstanding of foaming of oil in equipment, configuration control practices, unmarked sight glasses, and the quality of alarm response instructions. The licensee has implemented adequate corrective actions to verify and address these generic concerns.

02.03 Corrective Actions

a. Determine that appropriate corrective action(s) are specified for each root/contributing cause or that there is an evaluation that no actions are necessary.

The licensee took immediate corrective actions to replace the generator and return the diesel generator to operable status. The corrective actions for the identified root and contributing causes are discussed in NRC Inspection Report 50-416/99-19. The corrective actions to address the work planner modifying an instrument and controls work package for troubleshooting on a temperature sensor on diesel Bearing A to change the oil level on diesel Bearing B were addressed in Condition Report CR-GGN-1999-1889. The corrective actions were appropriate. The inspector found that the issue dealing with the operators approving the implementation of the maintenance task and the installation of an information tag stating that a test of the bearing oil level was in process on the diesel, was not initially identified in a condition report.

The licensee initiated Condition Report CR-GGN-1999-1103 to specifically address problems with the site program for information tags. The root cause for allowing a tag to be used was that the applicable policy guidance and expectations were not well defined or understood. This was specific to the lack of guidance on information tags in the operations procedures. The inspector noted that guidance existed in other procedures on the required documentation for conducting a test and that this documentation was not requested by the operators when the task was approved or when the tag was placed. NRC Inspection Report 50-416/99-19 documented that the licensee acknowledged the failed barrier and that the corrective actions were included in Condition Report CR-GGN-1999-1103. The licensee had also considered an inadequate questioning attitude as a contributor to the cause of the event.

The operations manager acknowledged that the approvals by the operators should have been addressed and initiated Condition Report CR-GGN-2000-0994 to capture this performance problem. The inspectors discussed the failure of operators to ensure that site procedures were being met before approving the work with the operations manager and superintendent. They acknowledged this failure and referenced other incidents involving less than adequate adherence with procedures involving the operations department. The inspector found that the corrective actions for these incidents took place after the diesel failure and that they were designed to stress adherence to

procedures. Corrective actions included sending a letter dated November 8, 1999, from the operations superintendent to all operators stressing the requirement to adhere to procedures; implementing an industry bench marking list of expectations for a questioning attitude; and revising the Operations Expectations and Standards to provide more specific expectations and guidance.

b. Determine that the corrective actions have been prioritized with consideration of the risk significance and regulatory compliance.

The licensee's immediate corrective actions replaced the generator with a spare and restored the diesel generator operability within the Technical Specification allowed outage time for the high pressure core spray system. The inspectors witnessed the special testing performed to verify that the diesel generator operated properly and that the bearing monitoring instrumentation operated as designed.

c. Determine that a schedule has been established for implementing and completing the corrective actions.

The licensee has the corrective actions scheduled for completion according to the risk significance of the equipment or problem. The inspectors reviewed the licensee's plans for accomplishing the remainder of the open corrective actions and found them satisfactory.

d. Determine that quantitative or qualitative measures of success have been developed for determining the effectiveness of corrective actions to prevent recurrence.

The licensee is monitoring the Division III diesel under the maintenance rule program to ensure that further problems receive appropriate management attention. The licensee's corrective action process requires that each of the corrective actions be reviewed by the corrective actions group prior to closure to verify that the action taken met the original intent. Six months after all of the corrective actions are closed, the quality assurance group plans to perform an audit to determine whether the corrective actions were effective.

4 OTHER ACTIVITIES

4OA6 Meetings

.1 Exit Meeting Summary

On July 13, 2000, the inspector conducted a meeting with Mr. Joseph Venable and other members of plant management and presented the inspection results. The plant management acknowledged the findings presented. Plant management also informed the inspector that no proprietary material was examined during the inspection.

ATTACHMENT 1

PARTIAL LIST OF PERSONS CONTACTED

C. Bottemiller, Manager, Plant Licensing
B. Edwards, Manager, Maintenance
C. Ellsaesser, Manager, Corrective Action and Assessment
E. Harris, Manager, Systems Engineer
G. Sparks, Manager, Operations
J. Venable, General Manager, Plant Operations

LIST OF DOCUMENTS REVIEWED

Procedures:

01-S-03-11, "Significant Event Review Team, Revision 0
01-S-17-38, "Root Cause Evaluation Process," Revision 4
02-S-01-2, "Control and Use of Operations Section Directives," Revision 34

Condition Reports:

CR-GGN-2000-0504
CR-GGN-1999-1889
CR-GGN-1999-1083
CR-GGN-1999-1054
CR-GGN-1999-0961
CR-GGN-1999-0806

Miscellaneous:
GNRO02000/00001, "GGNS Response to Apparent Violations in Inspection Report No. 50-416/99-19," dated January 7, 2000
GG-1-LP-LOR-IE0C4, "Licensed Operator Requalification Training," Revision 0

ATTACHMENT 2

NRC'S REVISED REACTOR OVERSIGHT PROCESS

The federal Nuclear Regulatory Commission (NRC) revamped its inspection, assessment, and enforcement programs for commercial nuclear power plants. The new process takes into account improvements in the performance of the nuclear industry over the past 25 years and improved approaches of inspecting safety performance at NRC licensed plants.

The new process monitors licensee performance in three broad areas (called strategic performance areas): reactor safety (avoiding accidents and reducing the consequences of accidents if they occur), radiation safety (protecting plant employees and the public during routine operations), and safeguards (protecting the plant against sabotage or other security threats). The process focuses on licensee performance within each of seven cornerstones of safety in the three areas:

Reactor Safety	Radiation Safety	Safeguards
•Initiating Events	•Occupational	•Physical Protection
•Mitigating Systems	•Public	
•Barrier Integrity		
•Emergency Preparedness		

To monitor these seven cornerstones of safety, the NRC used two processes that generate information about the safety significance of plant operations: inspections and performance indicators. Inspection findings will be evaluated according to their potential significance for safety, using the Significance Determination Process, and assigned colors of GREEN, WHITE, YELLOW or RED. GREEN findings are indicative of issues that, while they may not be desirable, represent very low safety significance. WHITE findings indicate issues that are of low to moderate safety significance. YELLOW findings are issues that are of substantial safety significance. RED findings represent issues that are of high safety significance with a significant reduction in safety margin.

Performance indicator data will be compared to established criteria for measuring licensee performance in terms of potential safety. Based on prescribed thresholds, the indicators will be classified by color representing varying levels of performance and incremental degradation in safety: GREEN, WHITE, YELLOW, or RED. GREEN indicators represent performance at a level requiring no additional NRC oversight beyond the baseline inspections. WHITE corresponds to performance that may result in increased NRC oversight. YELLOW represents performance that minimally reduces safety margin and requires even more NRC oversight. RED indicates performance that represents a significant reduction in safety margin but still provides adequate protection to public health and safety.

The assessment process integrates performance indicators and inspection so the agency can reach objective conclusions regarding overall plant performance. The agency will use an Action Matrix to determine in a systematic, predictable manner which regulatory actions should be taken based on a licensee's performance.

The NRC's actions in response to the significance (as represented by the color) of issues will be the same for performance indicators as for inspection findings. As a licensee's safety performance degrades, the NRC will take more and increasingly significant action, which can include shutting down a plant, as described in the Action Matrix.

More information can be found at: http:\\www.nrc.gov\NRR\OVERSIGHT\index.html.