

ENCLOSURE 2

U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

Docket No.: 50-416
License No.: NPF-29
Report No.: 50-416/96-17
Licensee: Entergy Operations, Inc.
Facility: Grand Gulf Nuclear Station
Location: Waterloo Road
Port Gibson, Mississippi
Dates: September 29 through November 9, 1996
Inspectors: J. Tedrow, Senior Resident Inspectors
K. Weaver, Resident Inspectors
Approved By: P. Harrell, Chief, Project Branch D
Division of Reactor Projects

ATTACHMENTS:

Attachment 1: Supplemental Information

EXECUTIVE SUMMARY

Grand Gulf Nuclear Station NRC Inspection Report 50-416/96-17

The inspectors evaluated aspects of licensee operations, maintenance, surveillance, engineering, and plant support activities. This report covers a 6-week period of resident inspection.

Operations

- During a shutdown, operators performed well during the mode change and demonstrated quick response to unexpected events. Operations supervision demonstrated excellent focus and good command and control of the ongoing control room activities (Section O1.1).
- A violation of Technical Specification (TS) surveillance requirements (SR) was identified in that operators failed to perform required readings for five consecutive 12-hour periods. This violation resulted when an information tag directed operators to take required surveillance readings from an incorrect instrument and numerous operators failed to notice the error (Section O1.2).

Maintenance

- Good foreign material control practices and good communication on the refueling bridge were noted during the jet pump beam replacement work activities (Section M1.1).
- A violation was identified for the failure to revise Work Order (WO) 00159564. The work scope changed when Motor Control Center (MCC) 21B31 was energized by a temporary power source. This contributed to a journeyman electrician receiving an electrical shock. The electrician displayed poor work practices by not verifying that the MCC was deenergized. More significantly, electrical supervisors displayed poor oversight by not following procedures and revising the WO to reflect the actual work scope and equipment condition (Section M1.2).
- Following the Division 1 outage, all equipment that was staged for the outage was removed and good housekeeping controls were reestablished in the various engineered safety features rooms (Section M2.1).

Engineering

- System engineering provided good support during the troubleshooting activities for the Division 2 Standby Diesel Generator (SDG) (Section M1.3).
- Engineering evaluations for the standby service water temperature restriction and fuel pool sweep exhaust systems were technically sound and appropriate (Section E1.1).

Plant Support

- Radiological controls were fundamentally sound as demonstrated by proper radiological postings, safe radiological work practices, and knowledgeable health physics staff (Section R1.1).

Report Details

Summary of Plant Status

The plant began this inspection period at 100 percent power. On October 18, 1996, a power reduction was commenced and on October 20, operators manually scrammed the reactor from 25 percent power to start Refueling Outage 8.

I. Operations

O1 Conduct of Operations

O1.1 Control of Plant Operations (71707)

a. Inspection Scope

The inspectors conducted frequent reviews of ongoing plant operations, including control room observations, attendance of the daily status outage meetings, and plant tours.

b. Observations and Findings

The inspectors observed that operators performed well during the change from Mode 3 to Mode 4. The inspectors noted that operators demonstrated good communication and control during the cooldown when the condenser became unavailable and cooldown had to be conducted using the main steam line drains. The inspectors also noted that operators quickly determined and corrected the cause of an unexpected rise in suppression pool level and temperature during preparation of the residual heat removal system for shutdown cooling operation. The operations supervision in charge during the observed evolutions demonstrated excellent focus and control of the ongoing control room activities.

The inspectors routinely toured the auxiliary building, containment, drywell, and switchyard (during the refueling outage) and observed ongoing activities. The inspectors verified that high risk impact signs were posted around operable Division 2 safety systems during the Division 1 maintenance outage and that no work activities were being performed on Division 2 equipment that could have impacted system operability. In addition, the inspectors verified that selected, tagged components in the field were in the required positions.

O1.2 Missed TS Surveillance (71707)

TS SR 3.3.6.2.1 requires that a channel check be performed every 12 hours for the fuel handling area pool sweep exhaust secondary containment isolation instrumentation. The channel checks were normally performed in accordance with Procedure 06-OP-1000-D-0001 "Daily Operating Logs," Revision 100, using Recorder D17-RR-R606; however, on September 20 the recorder was removed from the control panel for maintenance. Operations personnel wrote and hung an

information tag on the control panels that indicated the required channel checks could be performed from instrument readings taken from Trip Units K17 (A-D) (fuel handling area ventilation exhaust trip units), which were the incorrect trip units. Trip Units K18 (A-D) were the applicable trip units for the fuel handling area pool sweep exhaust high high radiation instrumentation.

A control room operator wrote the incorrect information on the information tag and the tag was not peer reviewed, contrary to management expectations, prior to being placed on the control room panel. On September 22 another control room operator noted the erroneous tag while taking TS readings for the daily operating logs. A new information tag with the correct trip units listed was placed on the control panel, and the required surveillance was performed. The licensee initiated Condition Report 1996-0076 to address this issue.

The incorrect tag contributed to operators missing five consecutive 12-hour TS-required readings. Failure to perform the appropriate channel checks is a violation of TS SR 3.3.6.2.1. The inspectors concluded that clear opportunity existed during the previous five operating shifts and shift turnovers to identify the error and prevent the violation from occurring. Licensee management stated that, as part of their long term corrective actions, they plan to install permanent labels on the control panels next to each recorder used for TS surveillance readings (50-416/9617-01).

01.3 Conclusions on the Conduct of Operations

Operations were conducted in a safe and professional manner. Operators performed well during the change from Mode 3 to Mode 4 and demonstrated good command and control and quick response to unexpected events. The operations supervision in charge during the observed evolutions demonstrated excellent focus and supervisory controls on ongoing control room activities. A TS violation was identified when operators failed to perform TS surveillance requirements for five consecutive 12-hour periods.

II. Maintenance

M1 **Conduct of Maintenance**

M1.1 General Maintenance Comments

a. Inspection Scope (62707)

The inspectors observed portions of the jet pump beam replacement (WO 00169525).

b. Observations and Findings

The inspectors found the performance of this work to be satisfactory. The inspectors observed good foreign material control practices and good communication on the refueling bridge during the jet pump beam replacement work activities.

M1.2 Electrical Shock During Maintenance on MCC 21B31

a. Inspection Scope (62707)

Following the electrical shock of an electrician, the inspectors evaluated the circumstances for this event and reviewed the licensee's actions.

b. Observations and Findings

On October 28, 1996, electricians implemented WO 00159564, which specified in the work description to clean and inspect 480-volt MCC 21B31, a nonsafety-related panel. The WO impact statement specified that MCC 21B31 would be out of service and the feeder breaker racked out during the performance of this work. Electricians verified that the MCC feeder breaker was racked out and assumed that the MCC was deenergized but did not verify that the MCC was deenergized using a voltage meter. When cleaning was started in the MCC panels, an electrician received an electrical shock.

During review of this problem, the inspectors noted that MCC 21B31 was deenergized from the normal power supply but had subsequently been powered from a temporary source for needed plant equipment. During interviews with electrical maintenance supervision personnel, the inspectors discovered that the electrical personnel were only to perform a visual inspection and were not to clean the MCC, as specified in the work package. The inspectors found that WO 00158564 was issued prior to the outage with plans to deenergize the MCC; however, the work package was not revised to reflect the work scope change.

The inspectors reviewed Procedure 01-S-07-1, "Control of Work on Plant Equipment and Facilities," Revision 31, and noted that Step 6.7.6 stated that changes to work packages would be handled by: (1) revision, (2) correction, or (3) minor correction. The procedure classified a WO revision as an increase/decrease in the scope of the work. The inspectors concluded that WO 00159564 should have been revised to reflect that the MCC was powered by a temporary source, and the work scope should have been changed to delete the instruction to clean the MCC. The failure to revise WO 00159564 to decrease the work scope is a violation (416/9617-02).

As immediate corrective actions, work was stopped and the equipment was placed in a safe condition. A safety meeting was held and a safety investigation was initiated.

At the end of the inspection period, the licensee completed a root cause analysis and investigation and agreed that a violation of Procedure 01-S-07-1 had occurred. In addition, the inspectors noted that part of the recommendations from the root cause analysis report included improvements in work packages, prejob briefings, training, labeling and scheduling.

M1.3 Division 2 SDG Troubleshooting

a. Inspection Scope (62707)

The inspectors witnessed portions of the troubleshooting activities conducted in accordance with WO 00175399.

b. Observations and Findings

During performance of Procedure 06-OP-1P75-R-0004, operators secured Division 2 SDG when governor oil level decreased below the sight glass level. The licensee identified a small internal leak in the governor oil system; however, the leak did not impact operability as long as oil was added to the governor. After refilling the governor with oil, the licensee performed a maintenance run on the SDG using Procedure 06-OP-1P75-M-0002, "Standby Diesel Generator (SDG) 12 Functional Test", Revision 101.

During the performance of Procedure 06-OP-1P75-M-0002, Division 2 SDG automatically tripped. During troubleshooting activities, the licensee found the engine barring device loose. The licensee initially considered this a possible cause of the automatic trip. The barring device was subsequently tightened, and the pneumatic control board was changed. When a maintenance run was subsequently performed, the voltage did not come up to 4160-volts nor was the ready-to-load status light received in the control room. The Division 2 SDG operated for approximately 9 minutes until the operators shut down the SDG because of smoke coming from Local Control Panel P115.

Investigation revealed that the excitation shutdown relay was tripped and the resistors had overheated. The licensee determined that the excitation bridge and a faulty remote gate firing module (parts of the voltage regulator) had caused the previous automatic trip. The voltage regulator was replaced, and the postmaintenance/surveillance run was fully completed. The licensee elected to delay the Division 2 SDG 24-hour load test until the end of Refueling Outage 8.

The inspectors questioned if consideration was given for common-cause failure for the Division 1 SDG. The licensee indicated that the barring device was inspected for the Division 1 SDG and no problems were identified. The licensee stated that no problems were identified with the voltage regulator or the excitation circuitry during

the previously performed Division 1 SDG 24-hour load test and that failure of the excitation circuit was not considered to be a generic concern.

c. Conclusions

During the troubleshooting operations, system engineers provided continuous coverage and support. In addition, engineering supervisory and management personnel provided oversight of the activities.

M1.4 Surveillance Comments

a. Inspection Scope (61726)

The inspectors observed the performance of portions of the surveillance tests listed below:

- Procedure 06-OP-1P75-R-0004, "Standby Diesel Generator 12: 18 Month Functional Test", Revision 101, Attachment I, "24 Hour Load Test/ Hot Restart Test"
- Procedure 06-IC-1E12-Q-2002, "RHR Pump Discharge Pressure (ADS) Functional Test", Revision 100

b. Observations and Findings

The inspectors noted that the test procedures provided clear guidance and properly implemented TS requirements. Measuring and test equipment were verified to be within its current calibration cycle. During the surveillance test, Division 2 SDG experienced an equipment failure and had to be secured (refer to Section M1.3 for details).

M1.5 Conclusions on Conduct of Maintenance and Surveillance

The testing activities observed were performed properly. Test procedures provided clear guidance and properly implemented TS requirements. In addition, system engineering provided good support during the troubleshooting activities for the Division 2 SDG.

Good foreign material control practices and good communication on the refueling bridge were noted during the jet pump beam replacement work activities. Failure to revise WO 00159564 resulted in a violation of procedures and contributed to a journeyman electrician receiving an electrical shock. The electrical personnel involved displayed poor work practices by not verifying that the MCC was actually energized and taking the appropriate safety precautions. Electrical supervision displayed poor supervisory oversight by not revising the WO to reflect the actual work scope and equipment condition.

M2 Maintenance and Material Condition of Facilities and Equipment

M2.1 General Comments (62703, 71707)

On November 6, 1996, the inspectors walked down the low pressure core spray pump room, RHR A pump room, the Division 1 SDG rooms and portions of the Division 1 engineered safety feature electrical switchgear rooms. The inspectors verified that all materials staged for the Division 1 outage (i.e. scaffolding, tools, etc.) were removed and that work areas were cleaned prior to returning these systems to service and entering the Division 2 outage. The inspectors concluded that housekeeping was good in these areas and no problems were identified with the exception of four loose fasteners found on Local Control Centers LC15BA3 and LC15BA1, which did not effect operability.

III. Engineering

E1 Conduct of Engineering

E1.1 Reviews of Engineering Evaluations

a. Inspection Scope

The inspectors observed selected onsite engineering activities, including the review of the engineering evaluations listed below:

- Material Nonconformance Report 96-149 which limited standby service water temperature during shutdown cooling and normal operation.
- Safety Evaluation 96-0092 justified securing the fuel pool sweep supply and exhaust fans during core alterations and movement of irradiated fuel assemblies in the secondary containment.

b. Observations and Findings

The inspectors found these engineering evaluations technically sound and appropriate. The inspectors verified the compensatory measures for the standby service water temperatures given in the engineering evaluation were performed. Further, no problems were identified with the operational controls limiting the temperatures.

E2 Engineering Support of Facilities and Equipment

E2.1 Review of Facility and Equipment Conformance to Updated Final Safety Analysis Report (UFSAR) Description (71707, 37551)

A recent discovery of a licensee operating a facility in a manner contrary to the UFSAR description highlighted the need for a special focused review that compares plant practices, procedures, and parameters to the UFSAR description. While performing the inspections discussed in this report, the inspectors reviewed the applicable portions of the UFSAR that related to the areas inspected. The inspectors verified that the UFSAR wording was consistent with the observed plant practices, procedures, and parameters. No anomalies between the UFSAR and operation of the facility were identified.

IV. Plant Support

R1 Radiological Protection and Chemistry Controls

R1.1 Tour of Radiologically Controlled Areas

a. Inspection Scope (71750)

The inspectors made frequent tours of the auxiliary building, fuel handling bridge, containment, and drywell to observe radiological controls, practices, and postings.

b. Observations and Findings

In general, the inspectors found the areas to be properly posted. The inspectors observed that workers followed radiation work permit requirements and displayed good radiation worker practices. The inspectors interviewed health physics technicians that were posted at various health physics check points. The inspectors found health physics technicians knowledgeable of current plant radiological conditions and ongoing work activities in their assigned areas.

S1 Conduct of Security and Safeguards Activities

S1.1 Security Observations (71750)

The inspectors made periodic plant tours and observed security activities. Overall, the inspectors found security stations and compensatory posts to be properly manned. The inspectors found that stationed security personnel were cognizant of their responsibilities and assigned duties.

V. Management Meetings

X1 Exit Meeting Summary

The inspectors presented the inspection results to members of licensee management at the conclusion of the inspection on November 14, 1996. The licensee acknowledged the findings presented.

The inspectors asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

ATTACHMENT 1
SUPPLEMENTAL INFORMATION

PARTIAL LIST OF PERSONS CONTACTED

Licensee

C. Brooks, Licensing Specialist, Plant Licensing
C. Bottemiller, Superintendent, Plant Licensing
D. Cupstid, Acting Manager, Performance and System Engineering
L. Daughtery, Technical Coordinator, Plant Licensing
B. Eaton, General Manager, Plant Operations
M. Guynn, Radiation Control Supervisor, Radiation Protection
J. Hagan, Vice President, Plant Operations
A. Khanifan, Manager, Material Purchasing and Control
T. Kriesel, Radiation Control Supervisor, Radiation Protection
M. McDowell, Operations Superintendent, Plant Operations
R. Moomaw, Manager, Plant Maintenance
S. Mooney, Maintenance Specialist, Plant Maintenance
L. Moulder, Electrical Superintendent, Plant Maintenance
S. Saunders, Manager, Electrical/I&C Design Engineering
W. Shelly, Technical Coordinator, Training
C. Smith, Manager, Planning and Scheduling
T. Tankersley, Technical Coordinator, Plant Operations
J. Venable, Manager, Operations

NRC

J. Donahew, NRR Project Manager

INSPECTION PROCEDURES USED

37551	Onsite Engineering
40500	Effectiveness of Licensee Controls in Identifying, Resolving, and Preventing Problems
61726	Surveillance Observations
62707	Maintenance Observation
71707	Plant Operations
71750	Plant Support Activities

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

50-416/96017-01	VIO	Failure to perform required TS surveillance (Section O1.2)
50-416/96017-02	VIO	Failure to revise work packages in accordance with procedures upon work scope changes. (Section M1.2)

LIST OF ACRONYMS USED

CFR	Code of Federal Regulations
MCC	motor control center
NRC	Nuclear Regulatory Commission
PDR	Public Document Room
RHR	residual heat removal
SDG	standby diesel generator
SR	surveillance requirement
TS	Technical Specification
UFSAR	Updated Final Safety Analysis Report
VIO	violation
WO	work order