

ENCLOSURE 2

U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

Inspection Report: 50-416/96-06

License: NPF-29

Licensee: Entergy Operations, Inc.
P.O. Box 756
Port Gibson, MS 39150

Facility Name: Grand Gulf Nuclear Station

Inspection At: Port Gibson, Mississippi

Inspection Conducted: January 14 through February 24, 1996

Inspectors: J. Tedrow, Senior Resident Inspector
K. Weaver, Resident Inspector

Approved:


P. H. Harrell, Acting Chief, Project Branch D

3-19-96
Date

Inspection Summary

Areas Inspected: Routine, announced inspection of operational safety verification, maintenance and surveillance observations, onsite engineering, plant support activities, and followup of an licensee event report (LER).

Results:

Plant Operations

- Control over 11 disabled main control room annunciators was considered to be appropriate. No potential adverse effects in the ability of operators to properly respond to abnormal conditions or events with the disabled annunciators were identified (Section 2.2).
- The response by the control room operators to a seal steam system malfunction, during a down power to remove Condensate Booster Pump A from service, demonstrated quick response and good command and control (Section 2.3).
- Good communications were noted among control room operators during the control rod sequence exchange evolution (Section 2.3).

- Inconsistent control of personnel within the control room was noted. During the control rod sequence exchange, the shift supervisor maintained rigid controls over the noise and traffic in the control room. However, there was high personnel traffic and noise in the control room during response by operations personnel to the seal steam system malfunction (Section 2.3).

Maintenance

- As a result of an improper maintenance activity, the Division III Standby Diesel Generator was inoperable for 7 days. The implementing procedure failed to have the required specificity for performance of the task given the experience level of the individual assigned. Further, there was a lack of peer or supervisory oversight while an individual implemented a first time task. This is a violation of Technical Specification (TS) 5.4.1.a (Section 2.1).
- The work associated with troubleshooting solder contamination in the control rod drive air system was considered to be well controlled and effective (Section 3.1).

Engineering

- The failure to seismically evaluate or properly secure a storage locker in a remote shutdown panel room is a violation of Procedure 01-S-07-43 (Section 5.2).
- The licensee maintained a relatively small number of temporary alterations and had appropriate activities scheduled to remove them (Section 5.1).

Plant Support

- Security officers implemented the Security Plan in accordance with site procedures (Section 6.1).
- The radiological controls program was properly implemented (Section 6.2).

Summary of Inspection Findings:

New Items

- Violation 416/9606-01: Inadequate procedure for sampling the diesel lube oil system (Section 2.1).
- Violation 416/9606-02: A locker in the remote shutdown panel room was not properly secured (Section 5.2).

Closed Items

- LER 50-416/96-01 (Section 7)

DETAILS

1 PLANT STATUS

The plant began this inspection period at 100 percent power. On January 27, 1996, reactor power was reduced to 90 percent for turbine valve testing and was returned to 100 percent the same day. On February 10, reactor power was reduced to approximately 88 percent for control rod stroke testing and turbine valve testing. Reactor power was returned to 100 percent the same day. On February 13, reactor power was reduced to approximately 80 percent to perform control rod sequence exchange and maintenance on Condensate Booster Pump A. Reactor power was returned to 100 percent the same day and remained at 100 percent until the end of this inspection period.

2 OPERATIONAL SAFETY VERIFICATION (71707)

2.1 Inoperable Division III Standby Diesel Generator

On January 26, 1996, while performing the weekly prelube oil system surveillance for the Division III Standby Diesel Generator, an operator noted a significant oil leak coming from the lube oil strainer reservoir. Based on the amount of oil leakage from the reservoir, operations personnel determined that the Division III Standby Diesel Generator was inoperable and entered the limiting condition for operation specified in TS 3.8.1.

During subsequent troubleshooting, licensee personnel discovered that the retaining nut on the oil strainer reservoir cover was not tight and had allowed one strainer to become unseated, which resulted in oil leaking from the reservoir. Licensee personnel removed and inspected the strainer and O-ring seal and no damage was found. The strainer and O-ring were replaced; the system was inspected for leaks; the Division II Standby Diesel Generator was declared operable; and the TS limiting condition for operation was exited.

During the licensee's investigation of this event, it was discovered that, on January 19, a lube oil sample was taken from the Division III Standby Diesel Generator. During this sampling activity, an attempt was made to obtain an oil sample by loosening the retaining nut on the reservoir cover. Subsequently, when the retaining nut was tightened, a strainer became cocked and caused the retaining nut to be insufficiently tightened to seal the strainer cover and housing. This caused the lube oil leak identified by operations personnel on January 26. The licensee determined that the Division III Standby Diesel Generator was inoperable from January 19, when the oil sample was taken, until January 26, when the leak was discovered.

During review of this issue, the inspectors discovered that a mechanic had been assigned to perform the task of sampling the lube oil system on the Division III Standby Diesel Generator and this individual had never performed the evolution before. The individual was sent, with a copy of Procedure 07-S-15-6, "Lubricating Oil Sample Selection," to obtain the sample

and was not accompanied by a supervisor or another individual to ensure that the task would be performed correctly. Because of the nonspecific instructions provided in Procedure 07-S-15-6, the mechanic could not determine where and how the sample should be obtained. Instead of requesting assistance from his supervisor, he decided to loosen the retaining nut on the strainer housing cover and, after the nut was partially loosened, decided that this method was not appropriate. He then tightened the nut on the strainer cover and contacted another mechanic to request assistance in obtaining the oil sample. The two mechanics successfully obtained the oil sample and left the area. The mechanic originally assigned to obtain the sample did not inform maintenance supervision that the retaining nut for the oil strainer had been loosened and retightened.

Based on the review performed by the inspectors, it was determined that Procedure 07-S-15-6 was not adequate for the circumstances in that it did not provide sufficient information to the craft personnel assigned for obtaining a sample. As a result, the Division III Standby Diesel Generator was rendered inoperable. The failure to provide an adequate procedure for personnel assigned to properly perform safety-related activities is a violation of TS 5.4.1.a (416/9606-01).

The licensee documented this problem in Licensee Event Report 96-002, dated February 26, 1996. In this report, the corrective actions were addressed, which consisted of revising the procedure. However, no actions were discussed that specified what would be done to ensure that the appropriate training and oversight was provided for an individual performing an evolution for the first time. This violation was considered for issuance as a noncited violation but was not issued as such since all of the criteria specified in Section VII.B.1 of the Enforcement Policy were not satisfied.

The inspectors reviewed TS 3.8.1.B and noted that it required that three diesel generators shall be operable during Modes 1, 2, and 3. Because the licensee was unaware that the Division III Standby Diesel Generator was inoperable during this time frame, no actions associated with the TS limiting condition for operation were taken. The actions associated with the limiting condition for operation included: (1) restoration of the Division III Standby Diesel Generator within 72 hours or (2) declaration of the high pressure core spray (HPCS) system inoperable, and (3) verification that the reactor core isolation cooling (RCIC) system is operable. The inspectors reviewed the plant status for the period January 19-26, and noted that the RCIC system had not been declared inoperable. Because the HPCS limiting condition for operation allows 14 days to return the HPCS system to an operability status and the Division III standby diesel generator is not required to be operable if HPCS is inoperable, this was determined not to be a safety significant issue.

2.2 Review of the Status of Control Room Annunciators

The inspector reviewed the number of control room inoperable annunciators and noted the licensee had disabled 11 annunciators because of erroneous inputs or

for nuisance reasons. The inspector reviewed the annunciator response procedures and discussed the function of the alarms with licensee personnel to determine potential detrimental effects to operator response to abnormal conditions or proper response to events. The inspector did not identify any safety concerns with respect to the disabled annunciators.

2.3 Control Room Observations

On February 8, 1996, the inspectors observed operators respond to a malfunction in the seal steam system during a down power to remove Condensate Booster Pump A from service for preventive maintenance. During the preplanned power reduction, pressure in the seal steam system unexpectedly dropped to zero. Operations personnel demonstrated quick response and good command and control in response to the potential decrease in condenser vacuum. The seal steam system pressure returned to normal when power level was increased. The licensee repaired the steam seal system and verified that the system functioned normally.

The inspectors noted, during observation of this plant transient, that there was high personnel traffic and noise in the control room. This observation was discussed with the plant supervisor, who stated that the high traffic situation was intentionally allowed so the event could be discussed among the operators.

On February 13, the inspectors observed operators perform a control rod sequence exchange. The instructions for the sequence exchange also included procedural steps to scram time test four controls rods, which had been previously tagged out for maintenance and fully inserted into the reactor core, as required by the TS. The four control rods successfully passed the scram time test and were placed in the proper position, as specified in the sequence exchange. The inspector noted that, during the evolution, the shift supervisor maintained rigid controls over the noise and traffic in the control room. Good communications were also noted during this evolution.

3 MAINTENANCE OBSERVATIONS (62703)

During this inspection period, the inspectors observed portions of the maintenance activities, which included a review of the following work orders (WO):

- WO 160491: Change out Relief Valve 1C41-F029A with a spare in accordance with Procedure 07-S-14-281, "Flanged Connection Bolting Procedure"
- WO 157867: Replace pump packing for Standby Liquid Control Pump A in accordance with Procedure 07-1-34-C41-C001-1, "Standby Liquid Control Pump Disassembly, Inspection and Reassembly"

- WO 160764: Troubleshoot scram discharge volume vent and drain valve failure to properly stroke and retest in accordance with Procedure 06-OP-1C11-Q-0009, "Scram Discharge Volume Vent and Drain Valves Operability Test"
- WO 158412: Calibrate RCIC high steam seal air pressure switch

Except as noted below, no notable strengths or weaknesses were observed by the inspectors.

3.1 Scram Discharge Volume Vent and Drain Valves

The inspector monitored the licensee's activities to troubleshoot the scram discharge volume vent (Valve 1C11-F180) and drain valves (Valve 1C11-F181). These air-operated valves had failed to properly position during an inservice testing stroke test.

Licensee personnel verified proper operation of Valves 1C11-F180 and -F181 and then inspected the solenoid valve (Valve 1C11-F182), which controlled the air to both these valves. A piece of solder was discovered during inspection of the solenoid valve. The solder was lodged on the valve seat and prevented the valve from properly seating, which caused inadequate venting of the air header and prevented Valves 1C11-F180 and -F181 from operating properly. The solder was removed and the valve was reassembled.

During subsequent postmaintenance testing, the valves were stroked three times. On the third attempt, Valves 1C11-F180 and -F181 failed to properly position. Valve 1C11-F182 was again disassembled and another piece of solder was found on the valve disk.

The licensee performed air flushing of accessible portions of the associated air piping in an attempt to dislodge any additional solder in the system. A vacuum cleaner was utilized to remove any solder near the low section of piping where Valve 1C11-F182 was located, but none was found. Maintenance personnel were contacted about work that was performed during the last refueling outage, which involved brazing activities in this section of pipe. The licensee determined that appropriate foreign material control practices were employed.

Licensee personnel inspected the redundant solenoid valve (Valve 1C11-F009), which operated the other set of scram discharge volume vent and drain valves. No evidence of solder contamination was found in the valve or associated piping, which indicated that the extent of solder contamination was not extensive. To alleviate future concerns of debris entering the solenoid valves, the licensee installed a prefilter upstream of the solenoid valves.

The licensee satisfactorily stroked the vent and drain valves six times as a postmaintenance test. The licensee believed that any loose solder was removed from the immediate vicinity of the solenoid valves and that the valves would

operate properly in the future. The valves will remain on an increased test frequency in accordance with inservice testing program requirements.

The inspector observed portions of the valve disassembly and reviewed the postmaintenance testing performed. Engineering support was evident during this work and subsequent corrective actions. The air flush of the piping and valve disassembly received management attention pursuant to that provided for infrequently conducted evolutions because of the trip critical sensitivity of this system. The inspector considered the conduct of this work to be well controlled and subsequent system investigation effective.

3.2 Standby Liquid Control Pump Packing Replacement

The work package for Standby Liquid Control Pump A packing replacement specified that a postmaintenance test in accordance with Procedure 07-1-34-C41-C001-1 be performed. Section 7.13 of this procedure specified that the pump be started and operated through a test tank return line at incremental steps of discharge pressure until the rated discharge pressure (1300 psig) was achieved, with pump inspections at each incremental step. When operations personnel started the pump and attempted to establish the desired discharge pressure by throttling a valve in the test tank return line, the discharge pressure of the pump unexpectedly increased to approximately 1000 psig. The operator questioned this system response and stopped the pump.

Engineering personnel were contacted by the operations staff to evaluate the system response. Engineering personnel stated that, because of the piping configuration, this portion of the system had to be vented by running the pump and pushing any entrapped air into the test tank. Flow orifices had been installed in the test tank return line to limit flow, which had the effect of negating any effect of the throttling valve. As air was forced out and the system was filled with water, discharge pressure gradually increased until the pressure associated with the limited orificed flow was reached. It was determined that the system operated as designed and that the maintenance procedure contained minor errors. A procedure change was subsequently initiated to enhance the instructions provided to the test performer. The quarterly pump surveillance test was successfully completed.

Although the air venting was discussed among the operating personnel during the test prebriefing, it was not recognized that the steps in the maintenance procedure were confusing. The inspector questioned licensee personnel about prior performance of this maintenance task and was informed that for previous performances the maintenance procedure retest had been deleted and the regular surveillance performed instead. The inspector determined that licensee personnel responded appropriately to this situation.

4 SURVEILLANCE OBSERVATIONS (61726)

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

- Procedure 06-OP-1P75-V-012, "Standby Diesel Generator (SDG) 11 Operability Verification"
- Procedure 06-OP-1E51-Q-0003, "RCIC System Quarterly Pump Operability Verification"
- Procedure 06-OP-1C41-Q-0001, "Standby Liquid Control A Functional Test"
- Procedure 06-ME-1C41-R-0001-01, "Standby Liquid Control System Relief Valve Functional Test"

The inspectors concluded that the licensee safely performed these surveillance tests in accordance with established procedures. No significant strengths or weaknesses were observed by the inspectors, except as noted below.

4.1 Standby Diesel Generator 11 Operability Verification

The Standby Diesel Generator 11 test was a quick start test to verify the engine and generator would reach the required voltage and frequency within the specified time. This test was performed at the increased test frequency as a result of a previous overspeed trip event, as discussed in NRC Inspection Report 50-416/95-18. The inspector observed the performance of the test, which was completed satisfactorily. The inspector met with the system engineer for the diesel and discussed performance data gathered during previous engine starts. The system engineer noted an increased trend in the frequency stabilization time and recommended an inspection and lubrication of the engine fuel racks. After this work was performed, no appreciable effect was evident. The last three tests indicated consistent frequency stabilization times, which were all well within the allowed start time of the diesel, as specified by the TS.

4.2 Standby Liquid Control Relief Valve Functional Test

During the performance of this test, the inspector noted confusion among the test personnel as to what data to obtain and how to operate the relief valve test bench. The licensee had obtained a specifically designed test bench to test this valve. Because of computer software related problems, the test bench had been modified to delete automatic data recording while the test pressure was increased to check the relief valve set pressure. Test personnel were not familiar with the test procedure or the operation of the test bench. The test procedure required the craft to increase the test pressure at a fast rate and record the set pressure at which the valve lifted. A digital Heise gauge, with a maximum pressure indication lock-in feature, was employed to monitor the pressure. The test procedure directed the maximum pressure be

recorded from this gauge, as well as the valve set pressure when it lifted. Because of the rapid rate at which pressure was increased to the relief setpoint, actual test pressure increased a few pounds after the valve began to lift, which affected the maximum pressure indicated. The craft recorded this maximum pressure as the set pressure in accordance with the procedure.

Licensee maintenance planners had foreseen potential problems with the modified test equipment and old procedure and had decided to replace the relief valve with a new spare valve prior to testing the removed valve, so as to not increase the system out of service time, while test problems were being resolved with the old valve.

Test personnel realized that the set pressure initially obtained and the test method being employed were incorrect. An engineering request was generated to evaluate the test method. The test was subsequently declared invalid and directions provided to properly obtain the actual valve set pressure.

The inspector observed the subsequent valve testing, which utilized a visual observation of the relief valve lifting and a verbal mark to obtain the indicated pressure. The inspector considered the actions by the craft to resolve this problem to be proper.

5 ONSITE ENGINEERING (37551)

5.1 Control of Temporary Equipment Alterations

The inspectors reviewed the use of temporary alterations to plant equipment. The control of these alterations was previously reviewed, as discussed in NRC Inspection Report 50-416/95-02, and had not changed. Twelve temporary alterations had been implemented by the licensee. The inspector noted that none of the alterations involved safety-related equipment. Seven of the alterations were scheduled to be removed by permanent modifications during the 1996 fall refueling outage. The rest were being actively pursued. The inspector did not identify any safety concerns associated with the use of temporary equipment alterations.

5.2 Unsecured Locker in Remote Shutdown Panel Room

During a routine tour in the remote shutdown panel rooms, the inspectors noted that a storage locker approximately 4-feet high and 3-feet wide and, according to the licensee weighing about 150 pounds, was located adjacent to the Division II remote shutdown panel. The inspectors noted that the locker was not secured and discussed this observation with licensee personnel. The inspector was concerned with the potential for damage to the remote shutdown panel during a seismic event, which could result in the panel not being able to perform its design safety function.

During other routine tours of the plant, the inspectors had noted other cabinets and objects that were not secured and were in close proximity to safety-related equipment. The inspectors questioned licensee personnel

concerning what controls were in place for loose objects stationed in close proximity to safety-related equipment. Licensee personnel stated that Procedure 01-S-07-43, "Safe Handling of Loose Items Inside the Plant," defined the appropriate controls. Procedure 01-S-07-43, Step 6.4.14, stated, in part, that loose items, which weigh more than 10 pounds but less than 200 pounds and will remain for a long duration, must be tightly restrained to a permanent structural component such as handrails, structural steel, or reinforced concrete walls, floors, or columns. The inspectors reviewed the Updated Final Safety Analysis Report, Section 3.7, which stated, in part, any structures, systems, and components related to plant safety are required to have the capability to withstand potential earthquakes and have been designed to seismic Category I. Section 3.7 also stated that nonsafety-related systems and components whose continued function is not required to shut down the plant or mitigate the consequences of a loss-of-coolant accident, but whose failure during a safe shutdown earthquake could affect safety-related equipment, were seismically analyzed and supported, as necessary, to prevent such collapse on safety-related equipment.

Based on review of the procedure, the inspectors concluded that the storage locker in the remote shutdown panel room should have been secured and that the failure to secure the locker in accordance with Procedure 01-S-07-43 was a violation of 10 CFR 50, Appendix B, Criterion V (416/9606-02).

Subsequently, the licensee performed an evaluation and secured the storage locker in the remote shutdown panel room. In addition, the licensee performed a walkdown of the standby diesel generator rooms and the safety-related switchgear rooms. All other loose items identified during the licensee's walkdown had either been previously evaluated or an evaluation was performed in accordance with Procedure 01-S-07-43.

Subsequent to the licensee's walkdown, the inspectors noted an unsecured cart containing the portable jacking device in the Division III standby diesel generator room. The inspectors notified licensee personnel concerning this cart, which was located in front of the local engine control panel. During a subsequent tour, the inspectors again noted that the cart still remained unsecured in the diesel room. The inspectors again notified licensee personnel concerning the cart and the cart was subsequently removed.

6 PLANT SUPPORT ACTIVITIES (71750)

6.1 Security Observations

The inspectors periodically observed security practices to verify that security officers implemented the Security Plan in accordance with site procedures. Search equipment at the access control points was appropriately maintained, vital area portals were kept locked and alarmed, and personnel in the protected area were properly badged. The inspectors identified no deficiencies in this area.

6.2 Radiological Control Activities

During plant tours, the inspectors checked high radiation area doors required to be locked and found them to be appropriately locked. Radiological postings and radiation work permits (RWP) were also checked and verified to be in accordance with licensee procedures.

Total site dose for 1995 was 342 person-rem. This was below the goal of 345 person-rem. This lowered the three year rolling average dose from 290 to 243 person-rem. There were 239 personnel contamination events (PCE) recorded in 1995. This equated to 0.377 PCEs/1000 RWP hours which was above the goal of less than 0.250 PCEs/1000 RWP hours. Contaminated square footage remained approximately the same at 3.17 percent, which was above the goal of 2 percent.

7 REVIEW OF AN LER (92700)

(Closed) LER 416/96-001: Automatic Start of the Division III Standby Diesel Generator

This LER reported an automatic start of the Division III standby diesel generator on November 11, 1995, when an undervoltage condition occurred on the electrical grid. This event was previously discussed in NRC Inspection Report 50-416/95-18.

Licensee personnel determined that the diesel engine response was in accordance with the design of the system and that no corrective actions were warranted. The inspector reviewed the licensee's response and verified that the diesel generator response was in accordance with system design.

8 REVIEW OF UPDATED FINAL SAFETY ANALYSIS REPORT (UFSAR) COMMITMENTS (71707/62703)

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 compared plant practices, procedures, and/or parameters to the UFSAR descriptions. While performing the inspections discussed in this inspection report, the inspectors reviewed the applicable portions of the UFSAR related to the areas inspected.

During this review, the inspectors identified an inconsistency between the guidance provided in the UFSAR and plant practices. As stated in Section 5.2 of this report and the enclosed Notice of Violation, the inspectors identified that a storage locker in the remote shutdown panel room had not been seismically evaluated or properly secured in accordance with the guidance specified in Section 3.7 of the UFSAR and was a violation of a licensee procedure.

ATTACHMENT

1 PERSONS CONTACTED

Licensee Personnel

- *D. Bost, Director, Nuclear Plant Engineering
- *C. Bottemiller, Superintendent, Plant Licensing
 - W. Beck, Security Superintendent
 - M. Dietrich, Manager, Training
- *J. Dimmette, Manager, Operations
- *C. Dugger, Manager, Outage Maintenance and Work Control
- *C. Ellsaesser, Manager, Performance and System Engineering
 - C. Hayes, Director, Quality Assurance
 - C. Hutchinson, Vice President, Nuclear Operations
 - A. Khanifar, Manager, Materials, Purchasing and Contracts
- *M. McDowell, Operations Superintendent
- *M. Meisner, Director, Nuclear Safety and Regulatory Affairs
- *R. Moomaw, Manager, Plant Maintenance
 - A. Morgan, Manager, Emergency Preparedness
- *D. Pace, General Manager, Plant Operations
- *T. Tankersley, Radiation Control Superintendent

The inspectors contacted other licensee personnel during this inspection.

*Denotes personnel who attended exit interview.

2 EXIT MEETING

The inspectors conducted an exit meeting on February 26, 1996. During this meeting, the inspectors reviewed the scope and findings of the report. The licensee did not express a position on the inspection findings documented in this inspection report. The licensee did not identify as proprietary any information provided to, or reviewed by, the inspectors.