



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
REGION II  
101 MARIETTA STREET, N.W.  
ATLANTA, GEORGIA 30329

Report No.: 50-416/92-26

Licensee: Entergy Operations, Inc.  
Jackson, MS 39205

Docket No.: 50-416

License No.: NPF-29

Facility Name: Grand Gulf Nuclear Station

Inspection Conducted: October 1 through November 7, 1992

Inspectors:

R.H. Bernhard, Senior Resident Inspector Date Signed

C.A. Hughey, Resident Inspector Date Signed

Approved by:

F.S. Cantrell, Chief Date Signed  
Reactor Projects Section 1B  
Division of Reactor Projects

#### SUMMARY

##### Scope:

The resident inspectors conducted a routine inspection in the following areas: operational safety verification, maintenance observation, surveillance observation, self-assessment capability, action on previous inspection findings, reportable occurrences, and the plant lubrication program. The inspectors conducted backshift inspections on October 5, 19, 21, 27, and November 2, 1992.

##### Results:

One violation was identified for failure to follow procedures regarding the control of a vendor lubrication manual and subsequent manual recommendation updates (Paragraph 3.a). One non-cited violation was identified for failure to air roll the Division I Emergency Diesel Generator within the required time after shutdown (Paragraph 3.b). The licensee met the safety objectives in the areas of safety verification, maintenance and surveillance activities. (Paragraphs 3, 4 and 5).

## REPORT DETAILS

### 1. Persons Contacted

#### Licensee Employees

W. Cottle, Vice President, Nuclear Operations  
L. Daughtery, Superintendent, Plant Licensing  
\*M. Dietrich, Manager, Training  
\*J. Dimmette, Manager, Performance and System Engineering  
\*C. Dugger, Manager, Plant Operations  
C. Ellsaesser, Assistant Operations Manager  
C. Hicks, Operations Superintendent  
C. Hutchinson, General Manager, Plant Operations  
F. Mangan, Director, Plant Projects and Support  
M. Meisner, Director, Nuclear Safety and Regulatory Affairs  
D. Pace, Director, Nuclear Plant Engineering  
\*J. Roberts, Manager, Plant Maintenance  
\*R. Ruffin, Plant Licensing Specialist

Other licensee employees contacted included superintendents, supervisors, technicians, operators, security force members, and administrative personnel.

\*Attended exit interview

### 2. Plant Status

The plant operated in Mode 1, power operations, during the entire reporting period. As of the end of the reporting period, the unit had been on-line for 92 consecutive days.

#### Other inspections or meetings:

The annual emergency preparedness graded exercise was conducted on October 2, 1992. (NRC Inspection Report 50-416/92-23).

Dr. John T. Larkins, Director, Project Directorate IV-1, Office of Nuclear Reactor Regulation, USNRC, was on site October 21, 1992, to meet with the resident inspectors and observe the annual emergency exercise.

During the week of October 5, Region II, Division of Radiation Safety and Safeguards, Radiological Protection personnel conducted a review of Grand Gulf's radiation protection program. Results of the inspection are contained in NRC Inspection Report No. 50-416/92-25.

### 3. Operational Safety (71707 and 93702)

Daily discussions were held with plant management and various members of the plant operating staff. The inspectors made frequent visits to the control room to review the status of equipment, alarms, effective LCOs, temporary alterations, instrument readings, and staffing. Discussions were held as appropriate to understand the significance of conditions observed.

Plant tours were routinely conducted and included portions of the control building, turbine building, auxiliary building, radwaste building and outside areas. These observations included safety related tagout verifications, shift turnovers, housekeeping and general plant conditions. Additionally, the inspectors observed the status of fire protection equipment, the control of activities in progress, the problem identification systems, and the readiness of the onsite emergency response facilities. No deficiencies were identified.

The inspectors reviewed safety related tagout 922818 to ensure that the tagout was properly prepared, and performed.

The inspectors reviewed the activities associated with the listed below events:

- a. In response to deficiencies found at another facility in the area of equipment lubrication, the inspectors performed an examination of Grand Gulf's lubrication practices. Lubrication of equipment was performed by both maintenance and operations personnel. Maintenance performed all grease and oil changes, and additions required for greases and oils in more difficult to service equipment. Operations performed addition of oils to equipment with more accessible reservoirs, for example those with bulb type oilers.

The inspectors examined vendor manual number 460001518, 'Mobile Engineering Service Report', commonly known as the 'Lube Manual'. Four controlled copies of this manual were examined on September 30, 1992. One was found to be out of date. The out of date manual was located in the control room and was missing several vendor updates. This controlled copy was used as the reference to determine the correct oils to be added to equipment by the non-licensed operators performing plant rounds. It was later determined that the manual had been lost, reported as lost, removed from the controlled list, later found and placed back in service without returning it to Document Control. Administrative Procedure 01-S-05-4, Control of Vendor/Technical Manuals, Rev. 12, dated September 2, 1992, and earlier revisions of the procedure covering the last several years, had requirements that manuals that were lost and later found be returned to the document control group for disposition. This was identified as Violation 92-26-01, Control of Vendor Manuals. Operations replaced the subject uncontrolled manual with a current copy after the inspector's findings. The inspectors reviewed a list of equipment that operations added lubricants to and determined that the majority of the equipment was not safety related. The ECCS jockey pumps and standby service water fans are the major safety related loads lubricated by operations. These components did not have a change in oil recommendation during the period the manual was not updated. A check of oil viscosity results on oil samples for safety-related equipment did not show any out-of-range viscosities that would indicate use of a different type of oil.

The inspectors determined in their review of the program that the vendor had sent additional recommendations to the site in the form of a 'Lube Manual' dated October, 1990. This manual had not been processed in accordance with Procedure 01-S-05-4, which required new vendor manuals, vendor manual revisions or vendor information be forwarded to Document Control for processing. This was identified as part of Violation 92-26-01.

Subsequent to the inspector's finding the licensee performed a thorough review of the plant's lubrication program which resulted in revisions being planned for the licensee procedures governing lubrication and control of oils. Oil lockers were inventoried and cleared of excess oils, and a program was underway to label the equipment oiled by operations with the required oil type. The warehouse labelled all oil requisitioned with the type, name of requester and date of issue as required by Procedure 01-S-09-5, Warehouse Material Issue/Turn-In, dated August 12, 1992. System Engineering performed a review of viscosity records of oil samples taken from major equipment. Several non-safety related pieces of equipment were found to have mismatches. Vendors were contacted by the licensee to ensure that oil used provided adequate lubrication.

The inspectors will review the final lubrication procedures as they are issued. Changes made to the program recently should reduce the chance for improper lubricants to be added to plant equipment.

- b. License Condition 2.C.(25)(b) states that Entergy Operation Inc. shall comply with TDI emergency diesel generator requirements specified in Attachment 2 to the license condition. Paragraph 3.3 of this Attachment requires, in part, the following:

The engines shall be rolled over with the air start system and with the cylinder stopcocks open prior to each planned start, unless that start occurs within 4 hours of a shutdown. The engines shall also be rolled over with the airstart system and with the cylinder stopcocks open after four hours, but no more than 8 hours after engine shutdown and then rolled over once again approximately 24 hours after each shutdown.

However, on October 13, 1992, the maximum time for the post-shutdown air roll for the Division I EDG was exceeded. The 8 hour time period was exceed at 1355 hours, however, it was performed at 1539 hours, 1 hour and 44 minutes late.

Corrective actions initiated by the licensee to prevent recurrence included completion of the required air roll immediately upon discovery, 1 hour 44 minutes late, and revising Administrative procedure 01-S-02-3, Daily Operating Logs, Revision 41, to track required diesel generator air roll times the same as Limiting Conditions of Operations.



This licensee identified violation is not being cited because the criteria specified in Section VII.B of the Enforcement Policy were satisfied. This item was identified as a non-cited violation (NCV) 50-416/92-26-02 and was opened and closed during this inspection period.

- c. License Condition 2.C.(25)(b) also states that the origin of any water detected in the cylinder must be determined and any cylinder head which leaks due to a crack shall be replaced.

On October 14, 1992, during a required air roll prior to returning the Division I EDG to service from a planned maintenance outage, water was noted coming from the stopcock on the number 2 right bank cylinder head. The air roll was performed two more times with the same results. A work order was generated to replace the Number 2 right bank cylinder head and retest the Division I EDG. This work was successfully completed and the EDG was declared operable October 15, 1992, at 2350 hours.

An additional work order was generated to perform nondestructive examinations and hydrostatic testing of the removed head. Results of these examinations revealed a 3 inch longitudinal crack in the top left exhaust port less than 1/2 inch above the exhaust seat. This crack ran approximately 90 degrees around the port circumference. Additionally, pitting on the machined surface of the cylinder head fire deck, most likely from water intrusion, was observed. The removed head was manufactured in January 1975. Based on industry operating experiences, cylinder heads manufactured for Transamerica Delaval, Inc. Enterprise (TDI) for inline and V-type R-4 series engines prior to October 1978 were not stress-relieved and were susceptible to fatigue cracking in thin sections or from fabrication induced defects. These heads were classified as Group I heads. Heads cast between October 1978 and September 1980 (Group II) and those cast after September 1980 (Group III) benefited from improved manufacturing processes and quality control. At present there are 5 Group III heads and 11 Group I heads installed on the Division I EDG. A determination of the head grouping on the Division II EDG had not been completed by the end of the inspection period. The Division III EDG was manufactured by General Motors. The resident inspectors will continue to follow this issue.

- d. At 0800 on October 8, 1992, within two minutes of starting a SSW pump, operations received indications of low discharge pressures from the CCW pumps, along with a auto start of the standby CCW pump. CCW surge tank level alarms came in. Off-normal Emergency Procedure (ONEP) 05-1-02-V-1, Loss of CCW, was entered by the operating staff and the plant began a reduction of power at 0816 hours towards 80% power. The reactor water cleanup system (RWCU) was taken out of service and recirculation pump and motor winding

temperatures were monitored for increases. Significant amounts of air were vented from CCW. The plant was returned to normal status by 0940 hours after purging the air from CCW.

Incident Report Number 92-10-02 was initiated and the licensee formed a group to investigate the root cause of the event. The inspectors attended the initial root cause determination meeting and monitored the group's findings. The final results of the group are awaiting concurrence by an NPE Engineer. Preliminary results indicated that an interfacing valve between SSW and CCW did not fully close, leading to a partial draining of CCW, when SSW was configured for its weekly chemical addition run. The interfacing valve, 1P42-F201B, was a butterfly valve. The root cause tentatively identified was the lack of a dependable method for verifying full closure of the valve. The valve had been tested between October 1 and 3, 1992. The mispositioned valve led to a loss of CCW inventory and draining of the CCW system head tank with subsequent air intrusion through the system high point. The inspectors will continue to monitor the licensee actions in response to this event.

One violation was identified for failure to follow the Vendor Manual Procedure. One non-cited violation was identified for failure to air roll the Division I EDG within the required time after shutdown as per license condition. The remaining activities examined demonstrated acceptable licensee corrective actions and/or results.

#### 4. Maintenance Observation (62703)

During the report period, the inspectors observed portions of the maintenance activities listed below. These observations included a review of the MWOs and other related documents for adequacy; adherence to procedure, proper tagouts, technical specifications, quality controls, and radiological controls; observation of work and/or retesting; and specified retest requirements.

<u>MWO</u>	<u>DESCRIPTION</u>
54336	ARM calibration (hot machine shop)
921111	Implementation of MCP 921111 (Relocation of diodes on APRM H-ION chamber power supply.
82439	Inspection of spent fuel bundles XNC-827 and XNC-582 for fuel rod growth.
84350	"B" diesel driven fire pump maintenance

No violations or deviations were identified. The results of the inspection in this area indicated that with the exception of the lube oil program the maintenance program had been effective.

5. Surveillance Observation (61726)

The inspectors observed the performance of portions of the surveillance procedures listed below. These observations included a review of the procedures for technical adequacy, conformance to technical specifications and LCOs; verification of test instrument calibration; observation of all or part of the actual surveillance; removal and return to service of the system or component; and review of the data for acceptability based upon the acceptance criteria.

06-IC-1B21-M-1003      Reactor vessel low/high water level (RPS) functional test.

07-S-53-P42-9      Fuel pool heat exchanger flow (PM/WO #31896).

No violations or deviations were identified. The observed surveillance tests were performed in a satisfactory manner and met the requirements of the Technical Specifications.

6. Reportable Occurrences (90712 and 92700)

The event report listed below was reviewed to determine if the information provided met the NRC reporting requirements. The determination included adequacy of event description, the corrective action taken or planned, the existence of potential generic problems and the relative safety significance of each event. The inspectors used the NRC enforcement guidance to determine if the event met the criterion for licensee identified violations.

A report was made to the NRC under 10 CFR 50.72 (b) (2) (vi) on October 15, 1992, because the Mississippi Emergency Management Agency was notified of an incident that occurred in North Carolina. A container that had been shipped from the site by an express carrier had broken in the carrier's warehouse. One of the broken glass quart containers contained PCB contaminated transformer oils that were not radiologically contaminated. A cleanup was performed and reports were made by the express carrier to the Department of Transportation, Federal Aviation Administration (FAA) about possible violations of Title 49 of the Code of Federal Regulations. The PCB contaminated oil had been shipped by air without proper labeling, packaging, or entry on the shipping papers. The FAA was investigating this issue and the licensee was preparing a response to a FAA inquiry.

No violations or deviations were identified.

7. Action on Previous Inspection Findings (92701 and 92702)

(Closed) NOV 91-07-01, Failure to perform adequate review of ISI test results. During February 1991, the incorrect transposition of data during the quarterly LPCI/RHR subsystem "B" functional test caused the calculation of the RHR pump B differential pressure to appear acceptable for ISI requirements when, in fact, it was not. After discovery, the

surveillance was rerun on March 19, 1991, with satisfactory results. In addition, revisions to quarterly surveillance procedures for all ECCS pumps were issued to improve and clarify the formats in order to prevent incorrect data transposition. This item is considered closed.

(Closed) Inspector Followup Item 92-12-03, Followup the root cause of the refueling mast failure. During RFO5, the main refueling platform mast (NF500) hung up while being extended into the core to engage a fuel assembly. As a result, the licensee and the vendor initiated a root cause evaluation to determine the cause of the binding and any corrective actions. The vendor completed this evaluation on May 22, 1992, and determined that foreign particle contamination was the most probable root cause. The vendor, additionally, was to undertake actions to preclude the possibility of a recurrence of similar hardware failure which included: 1) Evaluate the mast design to prevent foreign particle contamination and/or increase tolerances, 2) Review manufacturing and shipping requirements, and 3) Inform other sites with a similar mast (via service information letter) of the potential problem. This item is considered closed.

#### 8. Exit Interview (30703)

The inspection scope and findings were summarized on November 6, 1992, with those persons indicated in paragraph 1 above. The licensee did not identify as proprietary any of the materials provided to or reviewed by the inspectors during this inspection. The licensee had no comment on the following inspection findings:

<u>Item Number</u>	<u>Description and Reference</u>
50-416/92-26-01, Vio.	Failure to follow Vendor Manual Procedure
50-416/92-26-02, NCV	Failure to air roll the EDG within the required time

#### 11. Acronyms and Initialisms

APRM	-	Average Power Range Monitor
ARM	-	Area Radiation Monitor
CCW	-	Component Cooling Water
ECCS	-	Emergency Core Cooling System
EDG	-	Emergency Diesel Generator
ISI	-	Inservice Inspection
IFI	-	Inspector Followup Item
LCO	-	Limiting Condition for Operation
LPCI	-	Low Pressure Core Injection
LPSCS	-	Low Pressure Core Spray
MCP	-	Minor Change Package
NCV	-	Non-Cited Violation
NDE	-	Nondestructive Examination
NPE	-	Nuclear Plant Engineering



NRC	-	Nuclear Regulatory Commission
ONEP	-	Off Normal Emergency Procedure
PCB	-	Polychlorinated Bithenyls
RFO5	-	Refueling Outage 5
RHR	-	Residual Heat Removal
RPS	-	Reactor Protection System
RWCU	-	Reactor Water Cleanup
SALP	-	Systematic Assessment of Licensee Performance
SSW	-	Standby Service Water
TDI	-	Transamerica Delaval, Inc.
TS	-	Technical Specification
USNRC	-	United States Nuclear Regulatory Commission