UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
101 MARIETTA STREET, N.W.
ATLANTA, GEORGIA 30323

Report No.: 50-416/92-12

Licensee: Entergy Operations, Inc.
Jackson, MS 39205

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

Facility Name: Grand Gulf Nuclear Station

Inspection Conducted: April 11 through May 15, 1992

Inspectors: J. L. Mathis 6/11/92
J. L. Mathis, Senior Resident Inspector Date Signed

for Johnny L. Mathis 6/11/92
C. A. Hughey, Resident Inspector Date Signed

Accompanying Personnel: F. X. Talbot, Reactor Engineer (Intern)

Approved by: Floyd S. Cantrell Jr. 6/11/92
F.S. Cantrell, Chief Date Signed
Project 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; reportable occurrences; and refueling activities. The inspectors conducted backshift inspections on May 3, 5, 7, 11, 12, 13 and 14, 1992.

Results:

During this inspection period two violations were identified. The first for failure to follow the actions specified by TS 3.0.3 when both trains of drywell purge compressor were out of service (paragraph 3). The second involved failure to follow procedure which resulted in an containment isolation of the reactor water cleanup system (paragraph 3).

In other areas, the licensee met the objectives in the areas of safety verification, maintenance, surveillance activities and refueling activities (paragraphs 3, 4, 5 and 7).

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REPORT DETAILS

1. Persons Contacted

Licensee Employees

*W. Cottle, Vice President, Nuclear Operations
*M. Dietrich, Director, Quality Programs
*J. Dimmette, Manager, Performance and System Engineering
*C. Dugger, Manager, Plant Operations
*C. Ellsaesser, Operations Superintendent
*C. Hutchinson, General Manager
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, Acting Superintendent. Plant Licensing

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

*Attended exit interview

Acronyms and initialisms used throughout this report are listed in the last paragraph.

2. Plant Status

The plant operated in mode one, power operations from the beginning of this inspections period to April 17, 1992. Power was reduced to approximately 70 percent on April 15, 1992 to performed flux tilting measurements. On April 16, power was reduced to 50 percent to perform main turbine feed pump overspeed testing. Refueling outage 5 for GGNS started on April 17, 1992.

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, 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, radwaste building, auxiliary building and outside areas. These observations included safety related tagout verifications, shift turnovers, sampling programs, housekeeping and general plant conditions. Additionally, the inspector 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.

On a weekly basis, selected ESF systems were confirmed operable by verifying that accessible valve flow path alignments were correct, power supply breaker and fuse status were correct and instrumentation was operational. The following systems were confirmed operable using Probabilistic Risk Assessment Based System Inspection Plans:

- High Pressure Core Spray (HPCS)
- Residual Heat Removal (RHR) A
- Low Pressure Core Spray (LPCS)

The inspectors reviewed safety related tagouts 921301 (MSR Vents); 921320 (RWCU Draining) and 921397 (ADS SRV) to ensure that the tagouts were properly prepared, and performed.

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

a. On April 9, 1992, at approximately 6:00a.m. cooling water to the Division 2 drywell purge compressor was isolated to perform a type C local leak rate test (LLRT) of its containment isolation valves. During the test, difficulty was experienced with the test equipment and the valve lineup was changed to expand the test boundary. A non-licensed operator was dispatched with the required lineup sheet to verify that valve P41F244B was closed, initial the valve lineup sheet and open a vent valve in containment. This operator closed valve P41F244A, instead of P41F244B. On April 10, 1992, at 7:00a.m. valve P41F244B was reopened as part of the Division 2 restoration. The error of closing valve P41F244A was not discovered until April 14, 1992, while performing a valve lineup for type C LLRT of containment isolation valves for Division 1 drywell purge compressor cooling water. Both Divisions 1 and 2 of drywell purge systems were simultaneously inoperable for approximately 13 hours. The required safety function of the drywell purge compressors is to purge noncondensibles from the drywell into the larger containment volume post-LOCA.

Technical Specification 3.6.7.3 requires two independent drywell purge system subsystems be operable in operational modes 1 and 2. With both divisions of drywell purge system being inoperable between 6:00p.m., April 9 to 7:00a.m. April 10, 1992, the requirements of TS 3.0.3 should have been followed. TS 3.0.3 specifies action to reduce plant power to mode 2 (startup) within six hours and mode 3 (hot shutdown) within the next six hours (where TS 3.6.7.3 would not apply). This failure to comply with TS 3.0.3 was identified as violation 92-12-01. Inattention to detail is the underlining factor that caused this event.

b. An automatic actuation of the reactor water cleanup (RWCU) system outboard containment isolation valves occurred on April 21, 1992, at 2352 hours. At the time of the actuation, the licensee was performing surveillance procedure 06-0P-1B21-R-0006, Attachment II, which functionally tests the reactor water sample valves by verifying that on an isolation test signal, each automatic isolation valve travels to its closed position. Step 5.3.5b and 5.3.5c required the operator to place reactor water sample valve logic B and C test switches to test; however, the operator incorrectly selected the RWCU test switches. These switches are located side-by-side on the same panel. The failure to follow procedure 06-OP-1B21-R-006, Attachment II, caused the RWCU isolation.

   Technical Specification 6.8.1c requires that written procedures be properly implemented covering surveillance and test activities of safety related equipment. The failure to follow surveillance procedure 06-0P-1B21-R-0006, Attachment II has been identified as violation 92-12-02.

c. On April 21, 1992, the HPCS jacket water coolers were isolated from HPCS service water in accordance with tagout clearance 92-1457 while the HPCS service water pump was running. The service water pump ran for approximately 45 minutes at a significantly reduced flow rate because flow was diverted through the HPCS pump room cooler only.

   The operator isolating the jacket water coolers was unaware that the HPCS service water pump was in operation. The licensee performed an engineering evaluation and ran the quarterly surveillance for HPCS pump operability per MNCR 92-0072. Clearance 92-1457 which directed isolating service water from the jacket water cooler apparently was not thoroughly evaluated water cooler apparently was not thoroughly evaluated prior to being implemented; however, proper approval had been obtained for use. Based on subsequent engineering evaluation and surveillance test data, the licensee determined that the HPCS service water pump was not damaged due to the improper operation.

d. On April 28, 1992, the BWR 4/5 tool was used to uncouple CRDM 24-17, and 5 other CRDMs from their control rods. During the withdrawal of CRDM 24-17, the collet fingers on the index tube were repositioned from position 48, full out, to position 44 inadvertently. When the CRDM was reinserted, the new latched position of the index tube raised the control rod off the backseat position and created a gap between the control rod velocity limiter and the control rod guide tube. This gap allowed reactor water to leak under the vessel area at a flow rate of 50 to 100 GPM for approximately 20 minutes. The leaking water sprayed onto adjacent instrument connectors causing a RPS actuation. The reactor protection system was in a half scram prior to the incident due to a planned Agastat relay replacement. The full scram (RPS actuation) occurred when the leaking water sprayed onto a cable associated with LPRM 34-19 resulting in a failure that caused a high neutron flux trip on APRM channel G. When the leak was reduced to approximately 5 gpm, RC & IS faults were cleared and work on CRDMs and the refueling floor resumed.

4. Maintenance Observation (62703)

During the report period, the inspectors observed portions of the maintenance activities listed below. The 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.

MWO	DESCRIPTION
51949	MFPT overspeed trip test
65477	Perform DR/QR Baseline Inspections on Division II Diesel Generator.
68359	Fuel bundle reconstitution.

MWO (cont'd)	DESCRIPTION
72430	Trouble shooting of Div. II DG low lube oil pressure following surveillance testing.
19870048-1	Div. II DG starting air header replacement.

No violations or deviations were identified. The results of the inspection in this area indicate that the maintenance program was effective.

5. Surveillance Observation (61726)

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

06-OP-1P75-R-0004,	SDG 12, 18 Month Functional Test. Test No. 1 - 24 Hour Run. Test No. 4 Simulated Loss of Power. Test No. 6 Simulated Loss of Offsite Power and ECCS Actuation Test Signal.
06-OP-1P75-O-0010,	Standby and HPCS Diesel Generators 10-Year Functional Test - (Simultaneous Start Test)

No violations or deviations were identified. The observed surveillance tests were performed in a satisfactory manner and the test results met the acceptance requirements of the procedure and the TS.

6. Reportable Occurrences (90712 & 92700)

The event reports listed below were reviewed to determine if the information provided met 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. On May 5, 1992, the post-accident sampling system (PASS) entire liquid sampling capability was taken out of service due to LLRT work activity. Administrative procedure 01-S-06-5, Attachment III, "NRC Notification Requirements", states that for inoperabilities of the PASS panel caused by scheduled work during modes 4 or 5, the licensee shall notify the resident inspectors. The resident inspectors were notified on May 5, 1992, at approximately 2220 hours. A one-hour notification was also made to the NRC Operation Center.

b. During a review of calculation EC-Q1111-90001, Rev. 0, "Selection and Sizing of Thermal Overload Relays for 480 Volt 1E Motors" as part of the followup to the NRC's Electrical Distribution System Functional Inspection (IR # 90-24), and the GGNS electrical calculation upgrade program, it was determined that thermal overload settings for continuous duty 480V Class 1E motors may not be conservative. A Region II specialist followed up on these findings during April 20, 1992. For details refer to inspection report 50-416/92-15.

No violations or deviations were identified.

7. Refueling Operations (60710)

a. Prior to RFO5, the licensee replaced the main refueling platform mast with a new upgraded GE Model mast (NF500). This mast consisted of 4 telescoping sections that extended and contracted as appropriate during fuel manipulation. The telescoping portions of the mast are for stability only and any loads on the mast (i.e. during fuel movement) are supported by the spooling cable inside the telescoping sections.

On April 26, 1992, as the mast was being lowered/extended into the core to engage a fuel assembly, the 4 inch diameter telescoping mast section hung up in the 5 inch section. This prevented the 4 inch section from extending downward. The 3 inch section continued to extend to its full length at which point the additional weight jarred the 4 inch section loose and it fell its full length, impacting against the mechanical stops. The refueling bridge was declared inoperable. No fuel was attached to the mast grapple at the time.

After evaluating several options, the licensee replaced the mast with a similar model (NF 500) that had been shipped in from the LaSalle Nuclear Plant. The replacement began on April 28, 1992, at 3:30p.m. and refueling operations resumed on April 30, 1992, at 2:00p.m.

An initial evaluation of the removed mast was performed by licensee and vendor personnel to determine the cause of the binding. Scarring was observed on the 4 inch diameter section of the mast. Debris caught within the mast sections was the suspected cause; however, no significant debris was found during the examination. The licensee and the vendor initiated a more extensive root cause evaluation to determine the cause and any required corrective actions to the binding problems. This evaluation had not been completed by the end of the inspection period and will be followed as Inspector Followup Item 92-12-03.

b. On April 30, 1992, during refueling operations, control blade 24-17 became unattached from the grapple while being relocated from the reactor to its storage location in the upper containment pool. While the control blade was being placed in the storage location it became lodged on the top of the storage cell. The technician attempted to manually guide the blade into the storage cell; however, the grapple released the control blade handle and the blade remained hung up on top of the storage cell at about 30 degrees from a vertical position.

Investigations revealed that the bottom hook of the blade unlatch grapple engaged, but the top hook did not properly engage the bail handle. This resulted in the grapple disengaging while the blade was being guided into the storage cell. The licensee subsequently withdrew the mast and substituted a jet pump grapple that engaged the subject control rod bail handle. The rod was lifted off the top of the storage cell, examined by underwater cameras and when no damage found reinserted into its proper storage location. Corrective actions are being determined by the licensee to preclude recurrence.

8. Exit Interview (30703)

The inspection scope and findings were summarized on May 15, 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:

Item Number	Description and Reference
50-416/92-12-01, Vio.	Failure to follow the actions specified by TS.
50-416/92-12-02, Vio.	Failure to follow procedure.
50-416/92-12-03, IFI	Followup the root cause of mast failure.

9. Acronyms and Initialisms

ADS	-	Automatic Depressurization System
APRM	-	Average Power Range Monitor
BWR	-	Boiling Water Reactor
CRDM	-	Control Rod Drive Mechanisms
DR/QR	-	Design Review and Quality Revalidation
ECCS	-	Emergency Core Cooling System
ESF	-	Engineering Safety Feature
GE	-	General Electric
GGNS	-	Grand Gulf Nuclear Station
INOP	-	Inoperable
LPRM	-	Local Power Range Monitor
MCC	-	Motor Control Center
MFPT	-	Main Feedpump Turbine
MNCR	-	Material Nonconformance Report
MSR	-	Moisture Separator Reheater
MWO	-	Maintenance Work Order
NRC	-	Nuclear Regulatory Commission
PASS	-	Post Accident Sampling System
RC&IS	-	Rod Control and Information System
RF05	-	Refueling Outage Five
RPS	-	Reactor Protection System
RWCU	-	Reactor Water Cleanup
SDG	-	Standby Diesel Generator
SRV	-	Safety Relief Valve
TOL	-	Thermal Overload
TS	-	Technical Specification
UFSAR	-	Updated Final Safety Analysis Report