



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

Report No.: 50-416/92-02

Licensee: Entergy Operations, Inc.
Jackson, MS 39205

Docket No.: 50-416

License No.: NPF-29

Facility Name: Grand Gulf Nuclear Station

Inspection Conducted: January 1, 1992 through January 31, 1992

Inspector: *J. L. Mathis* 2/22/92
J. L. Mathis, Senior Resident Inspector Date Signed

Accompanying Personnel: C. A. Hughey

Approved by: *F. S. Cantrell* 2/22/92
F. S. Cantrell Section Chief Date Signed
Division of Reactor Projects

SUMMARY

Scope:

The resident inspectors conducted routine inspections in the following areas: operational safety verification; maintenance observation; surveillance observation; review of nonconformance reports; cold weather protection; action on previous inspection findings; and reportable occurrences. The inspectors conducted backshift inspections on January 13, 20, 25, 27 and 30, 1992.

Results:

During this inspection period, three violations were identified. The first violation was for failure to follow procedures to secure the standby service water 'A' pump. (paragraph 3). The second, for failure to follow procedures in recognizing, and documenting a limiting condition for operation for work being performed on a breaker associated with the RHR 'A' suppression pool suction valve (paragraph 3). The third, for entering a transient very high radiation area on the wrong RWP and the failure to perform an adequate radiological survey upon entry (Paragraph 3). These violations, although not indicative of programmatic breakdowns, appeared to be the result of inattention to detail, inadequate training and poor communications between plant personnel.

The licensee met the safety objectives in the areas of safety verification, maintenance and surveillance activities (paragraph 4 and 5).

REPORT DETAILS

1. Persons Contacted

Licensee Employees

*W. T. Cottle, Vice President, Nuclear Operations
D. G. Cupstid, Manager, Plant Projects
*J. F. Daughtery, Compliance Supervisor
M. A. Dietrich, Director, Quality Programs
*J. P. Dimmette, Manager, Plant & System Engineering
*C. W. Ellsaesser, Operations Superintendent
*M. F. Gynn, Supervisor, Radiation Control
*C. R. Hutchinson, General Manager, GGNS
F. K. Mangan, Director, Plant Projects and Support
*M. J. Meisner, Director, Nuclear Licensing
D. L. Pace, Director, Nuclear Plant Engineering
*J. V. Parrish, Manager, Plant Operations
*W. R. Patterson, Assistant, General Manager
*J. C. Roberts, Manager, Plant Maintenance
J. E. Reaves, Manager, Quality Services
*T. E. Tankersley, Superintendent, Radiation Control
G. W. Vining, Manager, Plant Modification and Construction
G. Zinke, Superintendent, Plant Licensing

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

*Attended exit interview

D. M. Verrelli, Branch Chief, DRP, Region II was onsite January 9-10, 1992, to review resident inspector's activities, and meet with licensee management.

F. S. Cantrell, Section Chief, DRP, Region II was onsite January 29-31, 1992, to review site and resident inspector's activities.

2. Plant Status

The plant started this inspection period in cold shutdown to replace the 'B' recirculation pump shaft. During this inspection period a special inspection (report 92-04) was conducted concerning recriticality while shutting down on December 30, 1991. The plant returned to power operation, on January 10, 1992, and remained in mode 1 throughout the inspection period.

3. Operation¹ 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 the 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, sampling programs, housekeeping and general plant conditions. Additionally, the inspectors observed the status of fire protection equipment, the control of activities in progress, the problem identification system, and the readiness of the onsite emergency response facilities. No deficiencies were identified.

The inspectors observed plant radiation controls, and health physics management's involvement and awareness of significant plant activities. The adequacy of physical security control was also verified.

Weekly selected ESF systems were confirmed operable by verifying that accessible valve flow path alignment was 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:

Standby Service Water System 'A'
 Low Pressure Core Spray System
 Automatic Depressurization System

Safety related tagouts, 910974 (RWCU Leak off valve); 911848 (Unit 1 fire protection valve); 920136 (TBCW pump C) and 926049 (IRM channel H) were reviewed to ensure that the tagouts were properly prepared, and performed.

MNCRs and QDRs were reviewed to verify that TSs were met, corrective actions as identified in the reports were accomplished or being pursued for completion, and that operability was not affected. The following MNCRs were reviewed:

MNCR - 009- 92,	E12-F004A Thermally Bound
MNCR - 010- 92,	SSW 'A' Pump Left Running
MNCR - 015- 92,	Standby Liquid Control Pump B Vibration
MNCR - 007- 92,	Steam Leak in 90 degree elbow

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

- a. As discussed in Inspection Report No. 50-416/91-23, the unit commenced shutdown on December 29, 1992, because of vibration changes on 'B' recirculation pump that have been indicative of shaft cracking

in the past. During the shutdown, the 'B' shaft was replaced. Visual and liquid penetrant testing of the removed shaft revealed almost 360 degrees circumferential cracking around the transition area of the shaft and was 'through-wall' in two small areas. This cracking occurred in the same area (transition area) as the 'B' pump shaft replaced in December 1990 and the 'A' and 'B' pumps shafts replaced in May 1989. The exact cause or mechanism of the cracking had not been determined by the licensee.

Diagnostic testing of the 'A' pump shaft revealed no significant indications of cracking problems and the 'A' pump shaft was not replaced. Both pump shafts are scheduled to be replaced during RFO5 (April 1992) with a modified design intended to reduce thermal gradients across the shafts by the use of a sacrificial shield. The Resident Inspectors will continue to follow this issue.

- b. During the performance of cold shutdown surveillance 06-OP-1E12-C-0013 to test the check valve in the feedwater line to the reactor vessel in accordance with Section XI of the ASME Code and Technical Specification 4.6.4.3, the licensee observed water flow from the test connection. This indicated that the check valve was not fully seated. The initial attempt to flush the line was unsuccessful. A Special Test Instruction was generated to pressurize the test volume in an attempt to seat the check valve. The licensee pressurized the test volume to approximately 750 psig. The licensee observed pressurized flow at the drain hose which indicated this attempt was unsuccessful. On January 7, 1991, the licensee disassembled the check valve and performed an internal inspection. The inspection revealed no abnormalities or deformations. The check valve was reassembled, air leak tested satisfactorily, and declared operable.
- c. On January 8, 1992, while returning SSW 'A' to the standby condition in preparation for startup, the operator failed to secure the pump as directed by step 4.5.2.8 of system operating instruction (SOI) 04-1-01-P41-1. Because the discharge valve had been properly closed in accordance with the procedure, the unsecured pump was pumping standby service water through the relief valve (PSV F299A). This went undetected for approximately 30 minutes. The pump was secured immediately upon discovering that it was running without a normal flow path. Technical Specification 6.8.1 requires that procedure be established and implemented as recommended in Appendix 'A' of Regulatory Guide 1.33, Revision 2, dated February 1978. Regulatory Guide 1.33 recommends instruction for startup and shutdown of SSW. The operator failed to follow procedure step 4.5.2.8 in securing the pump. A QDR was initiated by the licensee for corrective action. A surveillance test was performed after the incident to verify pump operability. This failure to follow procedure is a violation (92-02-01).

- d. On January 14, 1992, work order 59752 was authorized by the shift supervisor for the electrical group. The work order was for troubleshooting the RHR 'A' suppression pool suction isolation valve, E12-F004A, which had experienced thermal binding problems during the startup following the recirculation pump 'B' shaft replacement. This valve is a motor driven manual containment isolation valve. The motor thermal overload switch was found tripped after attempting to open the valve during startup. The breaker for the valve was deenergized (open) to support the work at approximately 0950; however, the shift superintendent failed to realize the impact of this work and did not enter a LCO. At approximately 1356 hours Operations realized an LCO had not been entered and the valve was inoperable. Operations then immediately closed the breaker to restore operability.

Technical Specification 3.6.4 requires, in part, that containment isolation valve E12-F004A be OPERABLE and with one or more of the containment isolation valves inoperable, maintain at least one isolation valve operable in each affected penetration that is, open, and within 4 hours restore the inoperable valve to OPERABLE status or be in HOT SHUTDOWN within the next twelve hours.

Technical Specification 6.8.1a requires that procedures be established implemented and maintained covering the applicable procedures recommended in Appendix "A" of Regulatory Guide 1.33, Revision 2 dated 1978. Contrary to the above the licensee failed to follow procedure 01-S-07-1, Control of Work on Plant Equipment and Facility. Section 6.6.2 of procedure 01-S-07-1 requires the shift superintendent or his designee to perform a Technical Specification/LCO review of work orders. Procedure 01-S-06-2, Conduct of Operation, requires in Section 6.2.3 that the shift supervisor approving maintenance work ensure TS requirements are met for inoperable equipment, and approve protective tagging. The failure to follow procedures in evaluating the effect of deenergizing this valve was identified as violation 92-02-02.

- e. On January 14, 1992, at approximately 1251 hours the control room received a call from a contract worker who was performing work on scaffolding in room 1A407. The worker informed them that his foot had slipped through the scaffolding and inadvertently tripped breaker 52-164138 (associated with valve E30-5928, suppression pool level sensing line). An operator was dispatched to reclose the breaker and LCO 92-0089 was entered against TS 3.6.4. All work in this area was terminated. Due to this and previous similar incidents where contract workers had inadvertently tripped breakers plant management suspended work for approximately 90 contract workers for a short period until they could cycle the workers through awareness training to prevent recurrence. All contracted workers were back on site by the end of this inspection period.

- f. On January 28, 1992 during the monthly Division I diesel generator surveillance test per procedure 06-OP-1P75-M-0001, the initial attempt to close the diesel generator output breaker (152-1508) was unsuccessful. No problems were noted with the incoming and normal voltage indications. LCO 92-0143 was initiated and work order 61560 was written to troubleshoot the problem. The licensee determined that the direct current(DC) power converter for the tachometer had apparently failed. The DC converter was replaced and LCO 92-0143 was closed upon satisfactory retest of DG 1. The licensee determined that this was a nonvalid failure and a special test report is to be submitted.
- g. On November 13, 1991, an entry was made by an operator and an accompanying health physics technician into a posted and locked Transient Very High Radiation Area [greater than 1000 mrem per hour] to perform a weekly operational surveillance of the drywell airlock. This entry was made under RWP 91-01-008, Operations Routine Inspections, Rounds, Lineups and Tagouts - Routine Radiological Controlled Area Access. Entries into Very High Radiation Areas were specifically excluded by this RWP. This incident was documented by the licensee on Radiological Deficiency Report No. 91-11-001.

Technical Specification 6.12.2 requires, in part, that areas accessible to personnel with radiation levels such that a major portion of the body could receive in one hour a dose greater than 1000 mrem [Very High Radiation Area] shall be provided with locked doors to prevent unauthorized entry and that these doors shall remain locked except during periods of access by personnel under an approved RWP which shall specify the dose rate levels in the immediate work area and the maximum allowable stay time for individuals in the area. It is important to note that Radiation Protection Instruction (RPI) 08-S-02-20, Revision 9, paragraph 7.4.1.b require that Transient Very High Radiation Areas be controlled the same as very high radiation areas.

This Transient Very High Radiation Area was posted as such because it was adjacent to the Traversing Incore Probe (TIP) equipment. The dose rates in this area could have exceeded 1000 mrem per hour during operation of the TIPs. Also, RPI 08-S-01-24, Revision 22, paragraph 6.12 states that Health Physicists (technicians) are exempt from the requirement for the issuance of a RWP for entering radiological areas, except Very High Radiation Areas.

The licensee indicated the TIPs, were verified to have been withdrawn into their housing prior to entry by discussion between the health physics supervisor and the control room shift supervisors per procedure. When not in operation, the TIPs were protectively tagged and required both operations and health physics approval prior to removing the protective tagging at the controls located in the control room. Although this tagging procedure may have given a

high degree of confidence that the TIPs were in their housing, a gamma survey was not completed to verify this to be true. A survey of neutron exposure rates at the drywell airlock was performed; however, this survey was inadequate to evaluate the extent of radiation hazards that may have been present at the time of the entry had the TIPs been out of their housing. The transient nature of radiation levels in this and other similar areas places even more emphasis on the performance of sound and adequate radiological surveys. Both the HP technician and the operator were wearing alarming dosimeters.

10 CFR 20.201(b) requires each licensee to make or cause to be made such surveys as (1) may necessary for the licensee to comply with the regulations in 10 CFR Part 20 and (2) are reasonable under the circumstances to evaluate the extent of radiation hazards that may be present.

The failure to have an approved RWP to enter a Transient Very High Radiation Area and the failure to conduct an adequate survey of the area is a violation (92-02-03).

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.

<u>MWO</u>	<u>DESCRIPTION</u>
59590	Replace shaft bearing to aux. building chem. waste sump pump
58190	TBCW pump C inboard seal replacement

No violations or deviations were identified. The results of the inspection in this area indicate that the maintenance program was effective. The observed activities were conducted in a satisfactory manner and work was properly performed in accordance with the maintenance work orders and procedures.

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; observation of all or part of the actual surveillances; removal and return to service of the system

or component; and review of the data for acceptability based upon the acceptance criteria.

06-IC-1C51-M-2001	IRM Calibration.
06-IC-1E31-M-2003	Main Steam Line High Flow.

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

6. Reportable Occurrences (90712 & 92700)

The event reports listed below were 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.

On January 13, 1992, at about 0915, the NRC operations center was unable to contact the control room on the ENS. The ringer was not operating properly. However, the licensee was able to contact the operations center using the hotline phone. The operations center contacted AT&T about the problem and a work ticket was issued. A one hour report was made per 10 CFR 50.72.

Also, on January 13, 1992, at 1320 hours the state operational hotline malfunctioned. The licensee was not able to contact the Mississippi Highway Patrol, Mississippi Emergency Management Agency, Louisiana Emergency Management Agency and Louisiana Radiation Protection Agency using the "hotline". The licensee was able to contact the first three agencies by commercial phone. AT&T was contacted to troubleshoot the problem. A one hour report was made per 10 CFR 50.72. Repairs were completed and the system successfully tested by 1445 hours January 14, 1992.

On January 31, 1992, at 1305 hours, the State Operational Hotline (OHL) became inoperable during a routine drill. The licensee was not able to contact the required State agencies from the Technical Support Center or the Control Room. The OHL in the Emergency Offsite Facility did operate properly. Normal communications through AT&T were available in the event of an emergency. The licensee's telecommunications group was contacted and repairs were completed the following day.

On January 29, 1992 at approximately 0545 hour, instrument air to the Post Accident Sampling System (PASS) was isolated to replace a leaking ASCO solenoid valve. This resulted in a complete loss of assessment capabilities using the PASS which is a one hour reportable event.

No violations or deviations were identified.

7. Cold Weather Preparations (71714)

During this inspection period the resident verified implementation of the licensee's cold weather preparation program for protective measures for extreme cold weather. The inspectors reviewed Equipment Performance Instruction 04-1-03-A30-1, Revision 4, Cold Weather Protection to verify that actions outlined were taken prior to cold weather conditions. The inspectors verified that selected breakers listed in Data Sheet II of the above procedure were in the required positions.

No violations or deviations were identified.

8. Action on Previous Inspection Findings (92701, 92702)

(Closed) Inspector Followup Item 90-15-01, Several examples of failure to follow procedures or inadequate procedures. The first example consisted of an inadequate procedure for removing tape from a terminal before connecting the transmutation unit. The procedure was revised per TCN 9. The change eliminated the use of tape and allows test equipment connections to be placed in less congested areas. The second example consisted of work being performed on the wrong valve for leak seal injection. The personnel who performed this work were counseled about complacency and inattention to details. The third example was for an inadequate procedure for not using protective covers for IRM push buttons to prevent using the IRM if inoperable. The licensee revised procedure 04-S-06-1 to include provisions for covers to be placed on push button controls for the IRMs (and also the SRMs). The fourth example consisted of an operator racking out the wrong RHR breaker. The operator was counseled. This item is considered closed.

(Open) Inspector Followup Item 90-15-05, Review Technical Specification submittal on DC load profile. Entergy submitted by letter dated January 11, 1991, a proposed amendment to the Grand Gulf Operating License. This amendment request deletion from TSs of the specific DC battery load profiles specified in 4.8.2.1.d.2. NRC, by letter dated January 28, 1991, requested additional information in order to complete their review. This review was still pending at the end of this inspection period. This item will remain open upon review by the NRC.

9. Exit Interview (30703)

The inspection scope and findings were summarized on January 31, 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>
92-02-01, V10.	Failure to follow procedure for securing SSW pump.
92-02-02, V10.	Failure to follow procedure for recognizing, entering and documenting a LCO for work being performed.
92-02-03, V10.	Entry into a Transient Very High Radiation Area on the wrong RWP and inadequate survey prior to entry.

10. Acronyms and Initialisms

ADHRS-	Alternate Decay Heat Removal System
ADS -	Automatic Depressurization System
APRM -	Average Power Range Monitor
ATWS -	Anticipated Transient Without Scram
BWR -	Boiling Water Reactor
CRD -	Control Rod Drive
DCP -	Design Change Package
DG -	Diesel Generator
ECCS -	Emergency Core Cooling System
ESF -	Engineering Safety Feature
FCV -	Flow Control Valve
HPCS -	High Pressure Core Spray
HPU -	Hydraulic Power Unit
I&C -	Instrumentation and Control
IFI -	Inspector Followup Item
IRM -	Intermediate Range Monitor
LCO -	Limiting Condition for Operation
LER -	Licensee Event Report
LLRT -	Local Leak Rate Test
LPCI -	Low Pressure Core Injection
LPCS -	Low Pressure Core Spray
MNCR -	Material Nonconformance Report
MSIV -	Main Steam Isolation Valve
MWO -	Maintenance Work Order
NPE -	Nuclear Plant Engineering
NRC -	Nuclear Regulatory Commission
PDS -	Pressure Differential Switch
P&ID -	Piping and Instrument Diagram
PSW -	Plant Service Water
QDR -	Quality Deficiency Report
RCIC -	Reactor Core Isolation Cooling
RHR -	Residual Heat Removal
RPS -	Reactor Protection System
RWCU -	Reactor Water Cleanup
RWP -	Radiation Work Permit

SBLC - Standby Liquid Control
SOI - System Operating Instruction
SRV - Safety Relief Valve
SSW - Standby Service Water
TBCW - Turbine Building Cooling Water
TCN - Temporary Change Notice
TS - Technical Specification