



UNITED STATES
 NUCLEAR REGULATORY COMMISSION
 REGION II
 101 MARIETTA STREET, N.W., SUITE 2900
 ATLANTA, GEORGIA 30323-0199

Report No.: 50-416/94-10

Licensee: Entergy Operations, Inc.
 Jackson, MS 39205

Docket No.: 50-416

License No.: NPF-29

Facility Name: Grand Gulf Nuclear Station

Inspection Conducted: March 27, 1994 through April 23, 1994

Inspectors:	<u>FOR R. W. Wright</u>	<u>5/16/94</u>
	R. H. Bernhard, Senior Resident Inspector	Date Signed
	<u>FOR R. W. Wright</u>	<u>5/16/94</u>
	C. A. Hughey, Resident Inspector	Date Signed
	<u>FOR R. W. Wright</u>	<u>5/16/94</u>
	W. F. Smith, SRI, River Bend	Date Signed
Approved by:	<u>F. S. Cantrell</u>	<u>5/16/94</u>
	F. S. Cantrell, Chief Reactor Projects Section 1B Division of Reactor Projects	Date Signed

SUMMARY

Scope:

The resident inspectors conducted routine inspections in the following areas: operational safety verification, maintenance observation, surveillance observation, action on previous inspection findings, and reportable occurrences. The inspectors conducted backshift inspections on March 27, April 4 and 18, 1994.

Results:

The inspectors found the management decisions dealing with the problems of the plant's Scram Solenoid Pilot Valves to be conservative (paragraph 3.c.) Repairs were performed in a controlled manner by knowledgeable personnel (Paragraph 4.b.).

Administrative controls for overtime have been effective. Overtime is only used when required, not as a matter of routine (paragraph 3.b.).

Control room observations of nonroutine activities associated with the plant startup found good use of command and control, and improved use of communication techniques (paragraph 3.d.).

An awkward work package verified the value of supervisors being present during trip critical maintenance. Guidance was provided to complete the first part of the work and the work package was revised prior to additional work being performed (paragraph 4.a.).

A review of portions of the fitness for duty program ascertained its effectiveness for the example inspected (paragraph 7.).

A noncited violation was identified for a late entry into a Notification of Unusual Event. This occurred when the plant lost meteorological monitoring capability due to a lightning strike (paragraph 6.).

REPORT DETAILS

1. Persons Contacted

Licensee Employees

- D. Bost, Director, Nuclear Plant Engineering
- C. Bottemiller, Superintendent, Plant Licensing
- L. Daughtery, Technical Coordinator, Nuclear Safety and Regulatory Affairs
- W. Deck, Security Superintendent
- M. Dietrich, Manager, Training
- *J. Dimmette, Manager, Performance and System Engineering
- *C. Dugger, Manager, Plant Operations
- C. Ellsaesser, Technical Coordinator
- C. Hayes, Director, Quality Assurance
- *C. Hicks, Operations Superintendent
- C. Hutchinson, Vice President, Nuclear Operations
- M. Meisner, Director, Nuclear Safety and Regulatory Affairs
- *A. Morgan, Manager, Emergency Preparedness
- *D. Pace, General Manager, Operations
- *R. Ruffin, Plant Licensing Specialist
- S. Saunders, System Engineering Superintendent

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 was shutdown at 12:03 a.m. on March 27, 1994, as a result of management's concern of a potential common cause failure of the control rod drive mechanisms. The plant replaced or rebuilt all 193 of the scram pilot solenoid valves, restarted the reactor on April 1, 1994, and synchronized to the grid on April 4, 1994. The plant operated at or near rated power for the balance of the inspection period.

Discussions concerning graded quality assurance concepts were held on April 5, 1994, between licensee personnel and G. G. Zech, Chief, Performance and Quality Evaluation Branch Division of Reactor Inspection and Licensee Performance (DRIL), NRR; G. C. Millman, Section Chief, Division of Engineering, RES; R. M. Latta, DRIL, NRR; J. D. Peralta, DRIL, NRR; R. A. Gramm, DRIL, NRR; F. Jape, Technical Assistant, Division of Reactor Safety, Region II.

On April 22, 1994, the SALP presentation outlining the results of the Cycle 11 SALP were discussed with utility management at a public meeting. The details of the SALP are contained in NRC Inspection

Report No. 50-416/94-03. NRC personnel in attendance included S. D. Ebnetter, Administrator, Region II; W. D. Beckner, Director, Project Directorate (PD) IV-1, NRR; J. P. Jaudon, Deputy Director, Division of Reactor Safety, Region II (SALP Chairperson); P. W. O'Connor, Senior Project Manager, PD IV-1, NRR; R. E. Trojanowski, State Liaison Officer, Region II; K. M. Clark, Public Affairs Officer, Region II. A meeting with local officials was held immediately after the SALP presentation.

On April 21, 1994, S. D. Ebnetter participated in a presentation of licensed operator certificates.

3. Operational Safety (71707 and 93702)

- a. 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, 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 systems, and the readiness of the onsite emergency response facilities.

- b. The inspectors reviewed the licensee's use and control of overtime in critical plant groups. Extensions beyond TS requirements are required to be approved by the Plant General Manager or his designee (TS paragraph 6.2.2.f). The inspectors verified that administrative procedures were in place requiring this approval. The site interprets these extension approvals to be required for the operations, maintenance and health physics departments.

Requests from operations were minimal for 1992 and 1993, and as of March 7, 1994, there were no extension requests. During the Fall 1993 outage (RF06), there were over 100 requests for extension from the mechanical maintenance group, 15 from the I&C group and 42 from the electrical maintenance group. These requests were for the completion of critical path outage work. There have been 16 requests so far in 1994 due to a forced outage for ASCO scram pilot valve replacement. Requests in the Health Physics group for 1993 and 1994 were minimal. All overtime extension requests were properly reviewed and approved.

Overtime for radwaste operators was at 26 percent for 1993 and 31 percent through March 7, 1994. The licensee had posted 3 radwaste operator positions (1 vacancy and 2 newly created positions), and expects overtime to decrease within a few months when the new personnel complete training.

Overtime was audited by the Quality Program group during the last two outages. Problems were noted concerning the inclusion of turnover time into total time.

Extensions of overtime beyond TS guidelines did not appear to be excessive and were used only when necessary and not on a routine basis. When required, extension requests were properly approved per TSs. Administrative controls appear to be effective in controlling overtime usage.

- c. On March 27, 1994, while performing control rod scram time testing at Grand Gulf per TS 4.1.3.2.b and c., one rod out of first four being post maintenance tested, and four rods out of first ten tested for the 10% per 120 day TS requirement, tested "slow". Plant management decided the slow rods were indicative of a potential generic problem with the control rod drives, and the plant entered a 12-hour shutdown LCO per TS 3.1.3.2.c at 10:38 p.m. The plant was manually scrammed at 12:01 a.m. on March 27. Steps were taken prior to the insertion of the manual scram which allowed additional scram time data to be taken for those rods full out. All systems performed as expected during the shutdown.

A review was made of the computer data taken during the scram and the data taken prior to the scram for the 176 rods monitored. Five rods were identified as slow enough to meet the TS requirements for an inoperable rod for the first 10 percent of travel. Forty four rods were slow enough to have required actions under the TS if the plant were at power. All rods met the required insertion time to "full in", but some were slow to "start rod movement". Test equipment installed on selected rods indicated the delay was caused by the Scram Solenoid Pilot Valves top assemblies not allowing the air to vent as quickly as expected from the top of the scram valves.

The decision was made to replace or rebuild all of the SSPVs. The site did not have sufficient parts for total replacement of the SSPVs available at the time of the scram. Management decisions resulted in expedited procurement to allow repair of all (193) SSPVs. The inspectors observed PSRC meetings during the shutdown concerning the repair decisions and the decision that the generic problem had been addressed adequately to allow restart. The inspectors found the decision made by PSRC to shut the plant down, the disposition of repair issues, and the restart decision to be conservative. (See paragraph 4. for maintenance observations.)

d. The inspectors performed periodic monitoring of control room activities during plant startup from the forced outage. Observed activities were conducted in accordance with IOI 03-1-01-1, Rev. 49, Cold Shutdown to Generator Carrying Minimum Load, and IOI 03-1-01-2, Rev. 35, Power Operations. The reactor mode switch was placed in "startup" on April 1, 1994, at 3:27 p.m. The first initiated rod was pulled at 3:50 p.m. Two manual scrams were maintained from low power during the restart to allow post scram times were faster than the maximum scram insertion times specified in IS 3.1.3.2. These results were reviewed by the inspectors. The generator was synchronized to the grid on April 4, 1994, at 1:02 a.m.

Control room distractions were kept to a minimum during control rod movements. Independent verification of rod movements by reactor operators was performed. Good command and control were maintained by the shift superintendents. Use of repeat backs were consistently observed.

4. No violations or deviations were identified.

a. 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

119479

116646

19910077 (MWP)

DESCRIPTION

Change core top and bottom limits (TIPs)

Cathodic protection testing for EDG fuel oil storage tanks

Replace existing Rosemount 510DU trip units with new 710DU trip units (SRVs) (B21-N618E and B21-N616E)

graded Rosemount trip units had different (10 turn) reset potential potentiometers to make adjusting the reset trip of the SRVs easier. The previous units had 1/4 turn potentiometers. The work package continually directed the technicians into and out of the work instructions to selected referenced procedures. This unnecessary complexity prevented technicians to stop and ask questions of a supervisor at the job. The supervisor guided the technician

- d. The inspectors performed periodic monitoring of control room activities during plant startup from the forced outage. Observed activities were conducted in accordance with IOI 03-1-01-1, Rev. 49, Cold Shutdown to Generator Carrying Minimum Load, and IOI 03-1-01-2, Rev. 35, Power Operations. The reactor mode switch was placed in "startup" on April 1, 1994, at 3:27 p.m. The first control rod was pulled at 3:50 p.m. Two manual scrams were initiated from low power during the restart to allow post maintenance scram time testing of the control rods. All rods scram times were faster than the maximum scram insertion times specified in TS 3.1.3.2. These results were reviewed by the inspectors. The generator was synchronized to the grid on April 4, 1994, at 1:02 a.m.

Control room distractions were kept to a minimum during control rod movements. Independent verification of rod movements by reactor operators was performed. Good command and control were maintained by the shift superintendents. Use of repeat backs were consistently observed.

No violations or deviations were identified.

4. Maintenance Observation (62703)

- a. 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>
119479	Change core top and bottom limits (TIPs)
116646	Cathodic protection testing for EDG fuel oil storage tanks
19910077 (MWP)	Replace existing Rosemount 510DU trip units with new 710DU trip units (SRVs) (B21-N618E and B21-N616E)

The upgraded Rosemount trip units had different (10 turn) reset differential potentiometers to make adjusting the reset trip points of the SRVs easier. The previous units had 1/4 turn potentiometers. The work package continually directed the technicians into and out of the work instructions to selected steps in referenced procedures. This unnecessary complexity caused the technicians to stop and ask questions of a supervisor who was present at the job. The supervisor guided the technicians

through completion of the work and directed that the work order be rewritten prior to replacing additional trip units. All equipment used was within current calibration requirements. This is an example of the effectiveness of having supervisors monitor trip critical processes.

- b. The inspectors observed portions of the maintenance performed to repair the SSPVs. All of the SSPVs had been replaced during RF06, so they had been in service less than one year. Samples of the slow SSPVs were sent to the valve vendor for evaluation. Examination of the internal parts of the valves showed the presence of small quantities of a threadlocker compound on the internal seating surfaces. A threadlocker compound was used to seal the scram air header to SSPV connection during the RF06 replacements. General Electric's evaluation showed that the threadlocker can interact with the seat material in the valve to cause the seat to exhibit adhesive characteristics, and slow the SSPV's response time.

A decision to replace all the SSPVs at the plant was made shortly after the shutdown. The inspectors monitored the replacement of SSPVs in containment. Teflon tape in limited quantities was used on the air connection. Each valve was assigned its own MWO to ease traceability of materials. Multidiscipline work crews were used for the replacement effort. The inspectors interviewed maintenance workers and found them to be knowledgeable of the task being performed. At one point questions arose about potential problems with the replacement valves. All previously replaced valves were then removed from the plant, disassembled, cleaned, inspected, bench tested, and replaced. The inspectors observed this cleaning effort and found it to be well controlled. Supervisory and management oversight was present at all the jobs observed by the inspectors. Potential housekeeping issues at the start of the job were quickly resolved. Post maintenance inspections of containment for cleanliness were conducted prior to restart.

- c. The non-outage corrective maintenance backlog continued to be maintained at manageable levels although there had been no significant decrease during the first few months of 1994. As of April 18, 1994, there were 512 open work orders.

No violations or deviations were identified. The results of the observations in this area indicated that maintenance activities were effective.

5. Surveillance Observation (61726)

The inspectors observed the performance of portions of the surveillances listed below. The 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-RE-SC11-V-0402, Rev. 34	Control Rod Scram Time Testing
04-1-03-P81--2, Rev. 1	Division 3 EDG Fuel Oil Storage Tank Level Verification
06-IC-1B21-Q-1001, Rev. 21	SRV High Pressure Trip/Low Low Relief/ECCS Vessel Pressure Injection Permissive Functional Test
06-IC-1C11-Q-0003, Rev. 20	Scram Discharge Volume High Water Level Float Switches (RPS) Calibration

On April 21, 1993, the inspectors observed the calibration check of the scram discharge volume high water level float switches, channels B and D. The inspector reviewed the surveillance procedure prior to the actual test and found it to be technically correct, and well human factored.

The inspector noted a poor radiological work practice and discussed it with the health physics technician at the test site, and later with the I&C supervisor. One of the technicians removed his lab coat to loan to another technician, while still wearing his anti-contamination rubber gloves. This was after connecting a potentially contaminated test rig. Although the gloves were being worn as a precaution and may not have been contaminated, he should have removed the gloves first to avoid contamination of the lab coat sleeves. The I&C supervisor said he would discuss the matter with the individual. This action was adequate.

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 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.

At approximately 2:10 p.m. on March 27, 1994, during a thunderstorm, the primary meteorological tower was struck by lightning. The lightning strike damaged instrumentation for both the primary and secondary towers, causing a total loss of monitoring capability. A one

hour report was made to the NRC and the senior resident who was on site at the time. The plant was shutdown at the time of the lightning strike. Weather information was available via the Weather Bureau at the Jackson Airport. During shift turnover, the oncoming operations staff identified that the conditions for entry into a Notification of Unusual Event were met (total loss of meteorological instrumentation). The NOUE was entered at 7:50 p.m. This late entry into the NOUE is identified as Non-Cited Violation 94-10-01, "Late Declaration of NOUE on Loss of Meteorological Tower." Instrumentation on the backup tower was restored and the NOUE exited at 2:00 p.m. on March 28. This licensee identified violation is not being cited because criteria specified in Section VII.B of the NRC Enforcement Policy were satisfied.

One noncited violation was identified.

7. Fitness for Duty Program

The inspectors performed a review of the fitness for duty program at the site. The program included a chemical testing program employing a triple bottle system to assure accuracy of results. Chemical pre-employment testing was required and was also used for pre-access certification, random testing, for those individuals with an EOF assignment, "for cause" testing, post-accident testing, and for follow-up after a positive test result. An Employee Assistance Program was available for those individuals who request help prior to being selected for a chemical test, for those who were referred by their supervisor, or for those recommended after their first positive chemical drug test.

If an individual was identified with their first positive finding in a chemical test, and confirmed by the medical review officer, the individual would be notified in writing of the positive test and of their right to appeal, suspended from work without pay for 14 days, and referred to EAP for assessment and treatment. Their unescorted access is revoked.

Upon release from EAP, the individual would be required to pass a chemical test to show the substance has cleared their body, would be entered into a follow-up testing program for up to a year, and would be certified by medical and management personnel as fit for duty. If a second positive drug screening were encountered, unescorted access would be suspended for three years, and the employee may be terminated.

The inspectors reviewed the case file of an employee terminated after the individual's second positive chemical test. One week after the first positive test the individual was notified of the first positive result and of the right to appeal. Unescorted access was revoked, the individual was suspended for 14 days without pay, and was referred to the EAP. While on time off without pay, the individual was contacted by his supervisors and asked to provide a second opinion on a technical matter in which the employee had knowledge. The inspectors judged this

work not to be safety related. About thirty days after the original positive test, the individual failed the first follow-up test that would have permitted reinstatement of unescorted access. The plant staff had already performed a review of the individual's work for the prior six months and had not found inaccuracies indicating chemical influence. In addition, investigation revealed no evidence of use of controlled substance on the site. A background investigation of the individual did not uncover derogatory information. Three days after this positive test, chemical testing indicated negative results. After signing an agreement to conditions of the EAP program recommendations, the individual was reinstated. The individual attended counseling and had random testing performed for one year. The individual was removed from the followup program. Five months later the individual tested positive in another random test, and was terminated. Management's reviews of the work performed by the individual did not indicate chemical influence.

The inspectors conducted interviews with the individual's supervisors and members of the plant security staff. The inspectors could not find evidence that any safety related work was performed while under the influence of drugs. The program included reviews of work performed by an individual who tested positive, and appeared to have adequate safeguards.

8. Licensee Evaluations of Changes to the Environs Around Licensed Reactor Facilities (TI 2515/112)

The inspectors reviewed the licensee's capability for identifying and evaluating any potential public health and safety issues resulting from changes in population distribution or in industrial, military, or transportation hazards that could arise near the site.

No formal program exists to specifically determine and evaluate changes; however, other programs are established that would identify any significant changes.

Paragraph 6.8.3.e.2 of the Technical Specifications and paragraph 3/4.12.2 of the Radiological Effluent Technical Specifications requires that a land use census be conducted every 12 months within a distance of 5 miles of the plant. Techniques used generally include door-to-door, visual and aerial surveys, and contact with local agricultural officials. Any significant population change or new industrial facilities would most likely be observed during these surveys. Although the purpose of this census is to satisfy 10 CFR 50, Appendix I requirements and identify any modification requirements to the radiological environmental monitoring program, it does identify the nearest occupied and unoccupied residences and any changes since the last report. The inspector reviewed the land use census results conducted during 1992 and 1993. There were no significant changes or differences.

Informal and formal contacts were maintained between the site Emergency Preparedness group and local officials and government agencies.

The inspectors reviewed the FSAR and were not aware of any significant changes to the environs around the plant since initial plant licensing.

9. Emergency Preparedness Drill (71750)

The inspectors observed portions of the 1st quarter 1994 Emergency Preparedness drill that occurred on April 6, 1994. Observations were made in the technical support center, operational support center, and the emergency operations facility. The drill scenario was challenging enough to test the emergency plans and their implementation. No prompting or coaching by the controllers was observed. Participation of the players and controllers during the post drill critiques was adequate. The inspectors concluded that the drill was successful.

10. Action of Previous Inspection Findings (92701 and 92702)

(Closed) Violation 50-416/92-26-01, Failure to follow vendor manual procedure. The inspectors had identified a vendor lube manual in use that had not been updated with the latest revisions per plant administrative procedures. The inspectors reviewed the licensee's response to the violation dated December 22, 1992, and verified the corrective actions described in the response. In addition, an audit was conducted January through February 1994 by the Quality Programs group which included a review of vendor manual controls. Problems with updating and control of vendor manuals were identified. Inspection Report 50-416/94-04, paragraph 3.d, discussed this audit.

Further review of the corrective actions this inspection period found no issue that would preclude closure of violation 92-26-01.

11. Exit Interview

The inspection scope and findings were summarized on May 4, 1994, with those persons indicated in paragraph 1 above. The inspectors described the areas inspected and discussed in detail the inspection results listed below. Dissenting comments were not received from the licensee. Proprietary information is not contained in this report.

<u>Item No.</u>	<u>Type</u>	<u>Description</u>
50-416/94-10-01	NCV	Late declaration of NOUE

12. Acronyms and Initialisms

ASCO -	Automatic Switch Company
DRIL -	Division of Reactor Inspection and Licensee Performance
EAP -	Employee Assistance Program
EDG -	Emergency Diesel Generator
ECCS -	Emergency Core Cooling System

EOF	-	Emergency Operations Facility
FSAR	-	Final Safety Analysis Review
I&C	-	Instrumentation and Controls
IOI	-	Integrated Operating Instruction
LCO	-	Limiting Condition for Operation
MWO	-	Maintenance Work Order
MWP	-	Maintenance Work Package
NCV	-	Noncited Violation
NOUE	-	Notice of Unusual Event
NRC	-	Nuclear Regulatory Commission
NRR	-	Office of Nuclear Reactor Regulation
PSRC	-	Plant Safety Review Committee
RES	-	Office Nuclear Regulatory Research
RF	-	Refueling Outage
RPS	-	Reactor Protection System
SALP	-	Systematic Assessment of Licensee Performance
SOI	-	System Operating Instruction
SRV	-	Safety Relief Valve
SSPV	-	Scram Solenoid Pilot Valve
TS	-	Technical Specifications