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

Report No.: 50-416/88-17

Licensee: System Energy Resources, Inc.
Jackson, MS 39205

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

Facility Name: Grand Gulf Nuclear Station

Inspection Conducted: July 16 through August 19, 1988

Inspectors: HC Dance /for 8/26/88
R. C. Butcher, Senior Resident Inspector Date Signed

HC Dance /for 8/26/88
J. L. Mathis, Resident Inspector Date Signed

Approved by: HC Dance 8/26/88
R. C. Dance, Section Chief, Division of Reactor Projects Date Signed

SUMMARY

Scope: This routine inspection was conducted by the resident inspectors at the site in the areas of Licensee Action on Previous Enforcement Matters, Operational Safety Verification, Maintenance Observation, Surveillance Observation, ESF System Walkdown, Reportable Occurrences, Operating Reactor Events, and Inspector Followup and Unresolved Items.

Results: In the areas inspected, violations or deviations were not identified. In general, the licensee's organization performed quite effectively in analyzing the cause of the reactor scram on August 15, 1988, and getting the plant back on-line timely.

REPORT DETAILS

1. Persons Contacted

Licensee Employees

J. G. Cesare, Director, Nuclear Licensing
D. G. Cupstid, Superintendent, Technical Support
*L. F. Daughtery, Compliance Supervisor
J. P. Dimmette, Manager, Plant Maintenance
S. M. Feith, Director, Quality Programs
C. R. Hutchinso , GGNS General Manager
R. H. McAnulty, Electrical Superintendent
A. S. McCurdy, Technical Asst., Plant Operations Manager
L. B. Moulder, Operations Superintendent
J. H. Mueller, Mechanical Superintendent
J. V. Parrish, Chemistry/Radiation Control Superintendent
J. L. Robertson, Superintendent, Plant Licensing
R. F. Rogers, Manager, Special Projects
S. F. Tanner, Manager, Quality Services
L. G. Temple, I & C Superintendent
F. W. Titus, Director, Nuclear Plant Engineering
*M. J. Wright, Manager, Plant Support
J. W. Yelverton, Manager, Plant Operations

Other licensee employees contacted included 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. Licensee Action on Previous Enforcement Matters (92702)

Not inspected this report period.

3. Operational Safety, Radiological Protection and Physical Security Verification (71707, 71709 and 71881)

The inspectors kept themselves informed on a daily basis of the overall plant status and any significant safety matters related to plant operations. Daily discussions were held with plant management and various members of the plant operating staff.

The inspectors made frequent visits to the control room such that is was visited at least daily when an inspector was on site. Observations included instrument readings, setpoints and recordings, status of operating systems, tags and clearances on equipment controls and switches,

annunciator alarms, adherence to limiting conditions for operation, temporary alterations in effect, daily journals and data sheet entries, control room manning, and access controls. This inspection activity included numerous informal discussions with operators and their supervisors.

Weekly, when the inspectors were onsite, selected Engineered Safety Feature (ESF) systems were confirmed operable. The confirmation is made by verifying the following: Accessible valve flow path alignment, power supply breaker and fuse status, major component leakage, lubrication, cooling and general condition, and instrumentation.

General plant tours were conducted on at least a biweekly basis. Portions of the control building, turbine building, auxiliary building and outside areas were visited. Observations included safety related tagout verifications, shift turnover, sampling program, housekeeping and general plant conditions, fire protection equipment, control of activities in progress, problem identification systems, and containment isolation. The licensee's onsite emergency response facilities were toured to determine facility readiness.

The inspectors reviewed at least one Radiation Work Permit (RWP), observed health physics management involvement and awareness of significant plant activities, and observed plant radiation controls. The inspectors verified licensee compliance with physical security manning and access control requirements. Periodically the inspectors verified the adequacy of physical security detection and assessment aids.

No violations or deviations were identified.

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 Maintenance Work Orders (MWOs) and other related documents for adequacy, adherence to procedure, proper tagouts, adherence to technical specifications, radiological controls, observation of all or part of the actual work and/or retesting in progress, specified retest requirements, and adherence to the appropriate quality controls.

MWO M82582 Retorque Starting Air Valve Capscrew for Division 2 Diesel Generator.

MWO M83316 Charge with Nitrogen Standby Liquid Control Pulsation Dampers.

MWO M81963 Inspect Flange Holes; Remove Cut-off Stud and Refurbish MSRVs as Required for Shipment to Wylie Laboratory.

MWO M83347 Rework SLC Test Connection Valve PPN402.

No violations or deviations were identified.

5. Surveillance Observation (61726)

The inspectors observed the performance of portions of the surveillances listed below. The observation included a review of the procedure for technical adequacy, conformance to technical specifications, verification of test instrument calibration, observation of all or part of the actual surveillances, removal from service and return to service of the system or components affected, and review of the data for acceptability based upon the acceptance criteria.

06-OP-1P75-M-0001, Revision 34, Standby Diesel Generator (SDG) 11 Functional Test.

06-IC-1E12-M-0001, Revision 23, LPCI System C Discharge Line High/Low Pressure Functional Test.

06-EL-1B21-M-0002, Revision 27, ADS Timers Functional Test and Calibration.

06-OP-1P81-M-0002, Revision 31, HPCS Diesel Generator 13 Functional Test and Calibration.

06-EL-1E12-M-0002, Revision 25, Containment Spray Time Delay Relay.

06-OP-1B21-V-0001, Revision 24, MSIV Operability Test.

06-IC-1B21-M-1005, Revision 23, Main Steam Line Low Pressure Channel B Functional Test.

No violations or deviations were identified.

6. Engineered Safety Features System Walkdown (71710)

A complete walkdown was conducted on the accessible portions of the High Pressure Core Spray (HPCS). The walkdown consisted of an inspection and verification, where possible, of the required system valve alignment, including valve power available and valve locking where required, instrumentation valved in and functioning; electrical and instrumentation cabinets free from debris, loose materials, jumpers and evidence of rodents, and system free from other degrading conditions.

No violations or deviations were identified.

7. Reportable Occurrences (90712 & 92700)

The below listed event reports were reviewed to determine if the information provided met the NRC reporting requirements. The determination included adequacy of event description and corrective action taken or planned, existence of potential generic problems and the relative safety significance of each event. Additional inplant reviews and discussions

with plant personnel as appropriate were conducted for the reports indicated by an asterisk. The event reports were reviewed using the guidance of the general policy and procedure for NRC enforcement actions, regarding licensee identified violations.

The following License Event Reports (LERs) are closed.

LER No.	Event Date	Event
*87-016	October 1, 1987	Area Radiation Survey Exceeded LCO Time Limit.
*87-018	December 14, 1987	Late Surveillance During Core Alterations.

No violations or deviations were identified.

8. Operating Reactor Events (93702)

The inspectors reviewed activities associated with the below listed reactor events. The review included determination of cause, safety significance, performance of personnel and systems, and corrective action. The inspectors examined instrument recordings, computer printouts, operations journal entries, scram reports and had discussions with operations, maintenance and engineering support personnel as appropriate.

At 4:17 a.m., on July 27, 1988, the control room operators observed approximately a 3% decrease in reactor power with a corresponding decrease in reactor vessel water level, feedwater flow and steam flow. Core thermal power decreased from 3831 MW at 4:17 a.m., to 3706 MW at 4:20 a.m., and returned to 3831 MW at 4:25 a.m. The B loop recirculation flow dropped from 41,000 GPM and then returned. Incident Report 88-7-3 was written to document this event. A Maintenance Work Order (MWO) 83422 was initiated to trouble shoot the B recirculation flow control system. At 10:49 a.m., on July 27, 1988, another perturbation in the B recirculation flow was observed and reactor thermal power decreased from 3833 MW to 3808 MW. The perturbations were severe enough to cause the B recirculation flow control valve Hydraulic Power Unit (HPU) to lock up at approximately the 60% open position. There was approximately a 3% mismatch between recirculation loops so the HPU was unsecured for flow adjustment and then resecured. Chart recorders were then connected to monitor the HPU panel. No safety features or TS requirements were affected. The licensee's troubleshooting could not identify the cause of the perturbations and discussions with GE and Foxboro indicated the most likely component to cause such events would be the flow control valve runback relay card. The licensee replaced the runback relay card as a precautionary measure and is continuing to monitor the HPU panel. On July 28, the licensee put the B recirculation loop thru the perturbations experienced on July 27, 1988, with no abnormalities noted. Since the noted perturbations are intermittent and no cause could be determined

during troubleshooting the licensee is continuing to monitor the flow control system. Followup of licensee's investigation of B recirculation loop perturbations will be Inspector Followup Item 416/88-17-01.

On July 31, 1988, at approximately 4:03 A.M. a control room operator observed recirculation pump A motor bearing oil level low alarm. The alarm in the control room was followup by initiation of Maintenance Work Order (MWO) I83459 to troubleshoot, verify and add oil. I&C verified that the alarm was valid. Thrust bearing upper and lower temperatures were monitored on panel P680 trend recorders for temperature. The upper bearing temperature averaged 112° F and 160° F on the lower bearing. Standing Order 88-0005 was written to provide additional requirements for continued operation of the recirculation pump with a lube oil low level annunciator. Standing Order 88-0005 directed operators to secure the affected recirculation pump if at any time a bearing temperature increases to 190° F. Temperatures of pump A motor bearing and cooling water are recorded shiftly. Further evaluation will be made during shutdown by the licensee. This item will be followup as Inspector Followup Item 416/88-17-02.

On August 15, 1988 while at 100% reactor power the reactor scrammed at approximately 3:52 p.m. due to APRM C,D,G and H tripped on a high neutron flux indication. Approximately 3-4 seconds prior to the scram signal, the GETARs system indicated a voltage spike on the 500 KV system. At the time of the scram several personnel onsite observed large lightening strikes. The licensee concluded that the most probable cause of the trip was that lightening struck plant structures or close by, causing at least 4 APRM upscale trips. Incident Report 88-8-3 was written to document this incident. Two previous events that occurred on July 12, 1982 and July 27, 1983, caused the reactor to scram due to lightening were documented in Incident Reports 82-7-10 and 83-3-100 respectively. The PSRC reviewed the completed on shift post-trip analysis and outlined testing to be completed prior to restart. No unreviewed safety questions or equipment operability concerns were identified. At approximately 10:57 p.m. the plant had recovered and the mode select switch was placed in mode 2. Criticality was achieved at 5:34 a.m. on August 16, 1988 on Group 7, Gang 2 rod position 8. The following actions were being taken by the licensee to prevent similar trips in the future:

a. GE will poll other plants to determine if they have had similar occurrences, and if so what changes were made to prevent them.

b. NPE-OAS will provide a report of this event to the industry through INPOs Nuclear Network.

c. An Engineering study will be performed to determine the adequacy of the GGNS grounding system.

No violations or deviations were identified.

9. Action on Previous Inspection Findings (92701)

(Closed) Inspector Followup Item 416/86-32-02, System Operating Instruction (SOI) for Standby Service Water (SSW) has inappropriate action step. The procedure SOI-04-1-01-P41-1 prescribes the venting of the siphon to ensure operability following a low level condition in the SSW basin. In order to assure proper levels in the vent line, the licensee has revised the procedure to inform the Shift Superintendent when levels are not as expected.

(Closed) Inspector Followup Item 416/87-26-02, Revise Surveillance procedures to incorporate steps for placing Standby Service Water (SSW) Motor Operated Valves (MOV) in test mode. The licensee revised Surveillance Procedure 06-OP-1P75-M-0001 and M-0002 for SDG 11 and SDG 12, respectively, to incorporate steps for placing SSW Division 1 and 2 MOVs in test position and returning the test switch back to normal when performing diesel surveillance.

(Closed) Inspector Followup Item 416/87-29-03, Analysis to determine if Silicone filled and Magnetrol/Transmitters response times are acceptable. This item relates to IE Notice 87-17. The inspector reviewed the analysis performed by the licensee which concluded that GGNS has adequate scram discharge volume available such that the response time of the transmitters does not present any concerns.

(Closed) Inspector Followup Item 416/87-10-03, Failure of mechanics to properly assemble a relief valve. The licensee issued two Quality Deficiency Reports (QDRs) 144-87 and 145-87 to address the problems associated with the reassembly of safety valves and inadequate instructions on MWOs. The inspector reviewed the documentation on QDR 144-87 which identified a weakness in the journeyman in dealing with relief/safety valve typed/selection and general maintenance. The training department established appropriate lesson plans to address this area. The inspector reviewed the documentation on QDR 145-87 which identified the deficiencies of certain MWOs not providing specific details in the work packages. Interim controls IPC 87/0977 were established and final disposition was accomplished by retraining the maintenance planning personnel on the importance of detail work instructions as delivered per procedure 07-S-01-205.

(Closed) Inspector Followup Item 416/87-10-07. The licensee modified Surveillance Procedures 06-OP-1P75-M-0001, Standby Diesel Generator (SDG) 11 Functional Test, and 06-OP-1P75-M-0002, Standby Diesel Generator (SDG) 12 Functional Test, to modify the method to reduce starting air pressure in the isolated air start lines.

(Closed) Inspector Followup Item 416/87-28-03. The licensee's off-shift analysis of scram number 45 also identified some of the discrepancies noted by the inspector. Procedure 01-S-06-26 was revised to include the parameters computer point number and description to prevent any misunderstanding by review personnel. Also, definitions of Cause and Root Cause have been included with the Cause being determined during the on shift analysis and the Root Cause being determined during the off shift analysis, if not already determined.

(Closed) Inspector Followup Item 416/88-03-02. The licensee issued Maintenance Work Order M6835 to install Hilti bolts to secure the cover on the forced balance strong motion accelerometer (SC85-N004).

10. Exit Interview (30703)

The inspection scope and findings were summarized on August 19, 1988, 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:

50-416/88-17-01, Inspector Followup Item, Investigation of B Recirculation Loop Perturbation.

50-416/88-17-02, Inspector Followup Item, Investigation of Recirculation Pump A Motor Bearing Oil Level Low Alarm.

Licensee management was informed that the seven IFI's discussed in paragraph 9 and two LERs in paragraph 7 were considered closed.

11. Acronyms and Initialisms

ADS - Automatic Depressurization System
APRM - Average Power Range Monitor
GE - General Electric
GETARS - General Electric Transient Analysis Recording System
GPM - Gallon Per Minute
GGNS - Grand Gulf Nuclear Station
HPCS - High Pressure Core Spray
HPV - Hydraulic Power Unit
I&C - Instrumentation and Control
IFI - Inspector Followup Item
INPO - Institute of Nuclear Power Organization
IPC - Internal Plant Correspondence
KV - Kilovolt
LCO - Limiting Condition of Operation
MOV - Motor Operated Valve
MSIV - Main Steam Isolation Valve
MSRV - Main Safety Relief Valve
MW - Mega Watt
MWO - Maintenance Work Order
NPE - Nuclear Plant Engineering
OAS - Operation Analysis Section
PSRC - Plant Safety Review Committee
QDR - Quality Deficiency Report
SDG - Standby Diesel Generator
SLC - Standby Liquid Control
SSW - Standby Service Water
TS - Technical Specification