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

Report No.: 50-416/94-05

Licensee: Entergy Operations, Inc.
Jackson, MS 39205

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

Facility Name: Grand Gulf

Inspection Conducted: January 24-28, 1994

Inspector: H. F. Whitener 2-24-94
H. Whitener Date Signed

Accompanying Inspectors: M. Thomas
G. Wiseman

Approved by: C. Casto 2-24-94
C. Casto, Chief Date Signed
Test Programs Section
Engineering Branch
Division of Reactor Safety

SUMMARY

Scope:

This routine, announced inspection was conducted in the areas of design changes and plant modifications, and engineering and technical support activities.

Results:

In the areas inspected, one violation was identified.

- This violation involved two examples related to failure to follow and implement design change process controls for plant modifications and failure to follow and implement fire protection procedures necessary to maintain the provisions of the approved fire protection program (paragraphs 2.b.(1) and 2.b.(2)).

- One inspector followup item (IFI) was identified to review the Final Safety Analysis Report (FSAR) update information relative to the implementation of minor change package (MCP) 88/1023 (paragraph 2.b.(3)).

- The inspectors found that, in general, design change packages (DCP) and MCPs reviewed were technically adequate. However, a weakness was observed where the post modification testing (PMT) requirements specified in the MCPs lacked adequate detail to ensure that the PMTs demonstrated whether the modifications would perform their intended function.

- The licensee had implemented a process for reviewing, prioritizing, and scheduling plant modifications. However, the inspectors noted an instance (documented in NRC inspection report 50-416/94-02) where this process was less than effective in ensuring that a modification which addressed nuclear safety was implemented in a timely manner.

- Organization and staffing levels for Design Engineering and Performance and Systems Engineering (P&SE) appeared to be adequate to perform the assigned duties and responsibilities.

- The various engineering groups provided adequate and timely support to maintenance and operations for day-to-day activities and emergent issues.

- The engineering groups were involved in the identification and resolution of problems. Engineering responses for identified material nonconformance reports (MNCR) were adequate, with reasonably descriptive evaluations and dispositions.

- Licensee management had implemented initiatives to reduce the backlog of items for selected areas.

- Quality assurance (QA) audit and engineering self assessment activities were effective in identifying areas for improvement in the engineering groups. The self assessment activities are a positive indication of management's ongoing efforts to improve engineering performance.

REPORT DETAILS

1. Persons Contacted

Licensee Employees

*A. Barfield, Supervisor, Structural/Projects, Design Engineering
*T. Barnett, Supervisor, Electrical Systems, Design Engineering
*D. Bost, Director, Design Engineering
*D. Cupstid, Manager, Project Management
*L. Daughtery, Superintendent, Plant Licensing
*M. Dietrich, Manager, Nuclear Training
*J. Dimmette, Jr., Manager, Performance and Systems Engineering (P&SE)
*R. Dubey, Manager, Civil/Configuration Management, Design Engineering
*C. Dugger, Manager, Plant Operations
*W. Eiff, Quality Engineer, Design Engineering
*C. Ellsaesser, Assistant Manager, Plant Operations
*H. Haddon, Engineer, Design Engineering
*E. Harris, Technical Coordinator, P&SE
*C. Hayes, Director, Quality Programs
*C. Hicks, Jr., Superintendent, Plant Operations
*V. Holmberg, Fire Protection Engineer, Plant Operations
*M. Humphries, Systems Engineering Supervisor, P&SE
C. Hutchinson, Vice President, Grand Gulf Nuclear Station
*A. Khanifar, Manager, Electrical/I&C/Programs, Design Engineering
*R. Moomaw, Engineering Support Superintendent, P&SE
*R. Ruffin, Licensing Specialist, Plant Licensing
*S. Saunders, Superintendent, Systems Engineering, P&SE
*M. Stevens, Systems Engineering Supervisor, P&SE
*S. Teague, Technical Assistant, Design Engineering
*T. Thornton, Senior Engineer, Design Engineering

Other licensee employees contacted during this inspection included engineers, operators, QA personnel, craftsmen, and administrative personnel.

NRC Resident Inspectors

*R. Bernhard, Senior Resident Inspector

*Attended exit meeting

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

2. Design Changes and Plant Modifications (37700)

a. Plant Modifications to Improve Reactor Safety

The inspectors reviewed the initiatives taken by the licensee to identify and implement plant modifications to improve reactor safety and plant operation. Documentation reviewed included: Administrative Procedure 01-S-17-2, "Change Review Board Process,"

Revision 1; the Change Review Board Project Work List; the active master issues list (MIL); January 1994 Change Review Board (CRB) Subcommittee activities; and the list of DCPs/MCPs that were worked/closed out since June 1992.

Procedure 01-S-17-2 provided instructions and responsibilities for the identification, initiation, review, control, and approval of plant issues. This included issues that resulted in plant design changes and modifications. An issue was defined as a documented condition, situation, or problem that was associated with plant structures, systems, components, or administrative processes. The CRB members were responsible for the initial screening, approval, and sponsoring of MIL items. The CRB consisted of the Site Vice President, Plant General Manager, Operations Manager, P&SE Manager, Maintenance Manager, Plant Projects and Support Director, Plant Modification and Construction Manager, Project Management Manager, and Design Engineering Director. The CRB Subcommittee, which consisted of representatives from each of the groups on the CRB, was designated as alternates for the CRB members and empowered to act on behalf of the CRB.

The inspectors reviewed the listed documentation and concluded that the licensee had demonstrated the use of a prioritization process. However, the inspectors noted an instance involving improper operation of the Division II drywell purge compressor control circuit in 1983 where the prioritization and scheduling process was less than effective in ensuring that the modification developed to address this issue (DCP 83/0452) was implemented in a timely manner. The issue was not corrected until 1993 when the problem occurred again. This item is discussed in greater detail in NRC inspection report 50-416/94-02.

DCPs and MCPs were prepared by the Grand Gulf Nuclear Station (GGNS) Design Engineering Department located onsite. Changes that led to modifications were primarily requested through the MIL process and were reviewed by the appropriate system engineer in the P&SE department located onsite.

The inspectors reviewed selected administrative procedures relative to design changes and modifications to determine the adequacy of the controls governing the design change process. The following procedures were reviewed:

01-S-16-1	Plant Design Change Implementation
NPEAP-304	Design Change Packages
NPEAP-317	Fire Protection Review of Design/Design Changes
NPEAP-334	Minor Change Packages

The inspectors concluded from reviewing the above procedures that adequate controls were in place to ensure effective implementation of design changes.

b. Planning, Development, and Implementation of Plant Modifications

The inspectors reviewed the DCPs listed below to: (1) determine the adequacy of the safety evaluation screenings and the 10 CFR 50.59 safety evaluations; (2) verify that the modifications were reviewed and approved in accordance with TS and applicable administrative controls; (3) verify the modifications were installed and had proper signoffs; (4) verify that applicable design bases were included and design documents (drawings, plant procedures, FSAR, TS, etc.) were revised; (5) verify that the modifications were properly turned over to operations; (6) verify that both installation testing and post modification test requirements were specified and that adequate testing was performed. The following plant modifications were examined:

DCP 82/5074	Installation of a Control Rod Drive (CRD) Maintenance Facility
DCP 85/0050	Installation of a Permanent Snubber Test Facility
DCP 88/0050	Protected Area Expansion
MCP 88/1023	Modify Control Room HVAC Flow Control Valves
MCP 92/1067	Division II Diesel Turbocharger Lube Oil Tubing Modification Request Per EER 90/6224

The inspectors verified that operations/control room significant drawings were updated before turnover to operations. The inspectors reviewed affected FSAR drawings, Fire Hazards Analysis (FHA), and FSAR tables and figures, to determine if the applicable documents had been updated to accurately reflect the modifications. During review of the above DCPs and MCPs, the inspectors identified some discrepancies and weaknesses relative to the implementation of the modification packages. These discrepancies and weaknesses are discussed below.

(1) Administrative Procedure, 01-S-16-1, Plant Design Change Implementation, Section 6.3, required that in response to the notification from P&SE requesting action the appropriate Section Supervisors/Superintendents must acknowledge the notification and provide P&SE Work Control with a list of all section procedures, programs, material requirements and required operator training/information that must be changed as a result of the design change. The inspectors' review indicated that the P&SE notification requesting review action for DCPs 85/0050 and 88/0050 clearly indicated the

scope of the design changes; however, on February 18, 1989, and January 11, 1991, Operations Section reviews of procedures, programs, or material requirements affected by Design Change Packages (DCPs) 85-0050 and 88-0050 failed to identify that certain features of the Operations Section Fire Protection Program were affected by the design changes. Specifically, the fire protection program features not identified or listed included: (1) the fire brigade Fire Preplans A-35 and A-39 for the Auxiliary Building needed to be updated; (2) the transient combustible control program required revisions for Fire Area 59 in accordance with the revised Fire Hazards Analysis description; and, (3) fire brigade re-training was required for these modifications. The failure of the Operations Section to adequately review and identify Fire Protection Program features affected by design changes as required in Procedure, 01-S-16-1, was identified as one example of Violation 50-416/94-05-01, Failure to Review and Update Fire Protection Program Elements and Documents Affected by Design Changes. A second example of Violation 50-416/94-05-01 is discussed in Section 2.b.(2) of this report.

(2) The inspectors reviewed Operations Section Procedure 02-S-01-18, Control Of Fire Preplans, Revision 4, dated November 8, 1991, to determine the Fire Protection Program requirements for the fire brigade Fire Preplans. Section 6.1 of the procedure required that controlled copies of Fire Preplans be readily available for use by the Fire Brigade Leader, Control Room Operator, Shift Supervisor/Shift Superintendent and Plant Fire Chief. Procedure 02-S-01-18 also required that Fire Preplans be reviewed on an annual basis and revised when changes or modifications are made to plant structures, systems, or components. Technical Specification (TS) 6.8.1.f. required that written procedures be established, implemented, and maintained covering the Fire Protection Program implementation. License Condition 2.C.(41) required that Entergy Operations, Inc. implement and maintain in effect all provisions of the approved Fire Protection Program.

The inspectors examined the Fire Preplan Manual, Revision 0, located in document control and determined that the Revision 0 document, distributed in November 1991, had not been reviewed annually and updated as required. Discussions with Operations Section management confirmed that the fire brigade Fire Preplans were not being updated. The failure of the Operations Section to annually review and update the status of the Fire Preplans as required in Procedure 02-S-01-18 was identified as another example of Violation 50-416/94-05-01.

(3) During review of MCP 88/1023, the inspectors also reviewed associated design documents that were updated as a result of the completed MCP. This included the Final Safety Analysis Report (FSAR) update information contained in FSAR Change Request 92/0020. The FSAR is scheduled to be updated during 1994. While reviewing the FSAR change request, the inspectors noted that the revised standby service water (SSW) flow of 60 gallons per minute (GPM) specified for inclusion in FSAR Table 9.2-16 for the control room air conditioning unit Loop B was less than the current FSAR value of 161 GPM, and was less than the values of 85.5 GPM specified initially in the MCP, and 100 GPM specified in change notice (CN) 92-0057 to the MCP. The inspectors questioned licensee personnel regarding the bases for the different flow values. Licensee personnel provided the inspectors with additional documentation (Calculation MC-QSZ51-87068, Rev. 0; MNCR 0028-92; and Engineering Report GGNS 92/0033) that provided the bases for the changes in flow from 161 GPM to 85.5 GPM, and from 85.5 GPM to 100 GPM. These flows were based on the worst case heat load conditions for the control room heating ventilation and air conditioning (HVAC) during the first 8 hours following a Design Basis Accident (DBA). The inspectors determined that 100 GPM was the SSW flow currently required for worst case DBA conditions. Licensee personnel indicated that the 60 GPM SSW flow for the control room HVAC was based on accident conditions after 8 hours when the heat load for the control room HVAC would be reduced. The inspectors questioned whether the 60 GPM flow was the appropriate value for FSAR Table 9.2-16 since the flow was not based on worst case accident conditions. The inspectors also questioned whether the other information in this FSAR table was based on worst case DBA conditions. Licensee personnel indicated that this item would be evaluated to determine the appropriate information for inclusion in FSAR Table 9.2-16. The inspectors will review this item during a future inspection. This item will be identified as inspector followup item (IFI) 50-416/94-05-02, Review FSAR Update Information Resulting from MCP 88/1023.

During further review of MCP 88/1023, the inspectors noted that CN 93-0024 removed limit switches QSP41N035A and QSP41N035B from flow control valves QSZ51F073A and QSZ51F073B, respectively, for the control room HVAC unit. These limit switches are shown on FSAR Figures 9.2-003 and 9.2-004 for the SSW system. There was no FSAR change request initiated to update the FSAR figures. The inspectors questioned licensee personnel who indicated that revisions to FSAR figures are identified and made by the Configuration Management Section in Design Engineering as part of their normal review of DCPs and MCPs. The inspectors will review this item during a future inspection

to verify that the revisions to the FSAR figures are made. This item will be tracked in conjunction with IFI 50-416/94-05-02 discussed above.

(4) While reviewing MCP 88/1023 and MCP 92/1067, the inspectors noted examples where the post modification testing (PMT) requirements specified in the MCPs did not provide adequate details for verifying that the modifications would perform their intended design function.

One example involved removal of the flow control valve limit switches in accordance with CN 93-0024 to MCP 88/1023, as discussed in paragraph 2.a.(3) above. The limit switches were installed to trip the condenser unit's compressor in the event condenser water flow was lost. The safety evaluation for the CN stated that the air conditioning (A/C) units were still protected from a loss of condenser water flow because the units would trip on either low suction pressure or high discharge pressure. The CN provides instructions for removal of the limit switches. The PMT specified in the CN state that after removing the limit switch, the A/C unit should be tested to ensure that it would operate without tripping on either high discharge pressure or low suction pressure. The inspectors questioned why the PMT did not verify that removal of the limit switches had not adversely affected the high discharge pressure or low suction pressure circuitry. Licensee personnel indicated that, although it was not specified in the PMT requirements, post modification scheme checks were performed. These scheme checks included verifying proper logic and circuit operation. These scheme checks did not include operating the A/C units. The inspectors concluded that the PMT requirements did not provide adequate detail for verifying that CN 93-0024 to MCP 88/1023 would perform its intended function. However, the scheme checks appeared to be satisfactory for demonstrating that the logic and circuitry would operate properly after the CN was implemented.

Another example where inadequate PMT requirements were specified involved MCP 92/1067. This MCP replaced the 5/8 inch tubing on the Division II diesel generator (D/G) turbocharger lube oil supply with 3/4 inch tubing to increase the oil pressure. The PMT specified in the MCP, and performed, only required an inservice leak test. There was no requirement to observe lube oil pressure during D/G operation to verify that the turbocharger lube oil supply pressure had increased. The PMT performed was not adequate to verify whether replacing the lube oil tubing had resolved the low pressure concern. Licensee personnel provided the inspectors with monthly trend data (covering the period from the time that the MCP was implemented in May 1992 through

December 1993) for the Division II D/G which showed that, subsequent to implementation of MCP 92/1067, the turbocharger lube oil pressure had increased and was in the normal operating range. Licensee personnel indicated that the turbocharger lube oil pressure was recorded for trend purposes during D/G monthly surveillance testing and during other times when the D/G is operated. The inspectors concluded that, although it was not verified by the PMT, MCP 92/1067 had met its intended function.

The inspectors concluded that the PMT requirements specified in MCP 88/1023 and MCP 92/1067 lacked adequate detail to demonstrate whether these MCPs met their intended function after being implemented. However, based on the review of additional documentation, the inspectors determined that adequate information existed which showed that other testing and/or equipment operation demonstrated that the MCPs met their intended function. The inspectors considered the lack of detailed PMT requirements to be a weakness in the implementation of these MCPs.

One violation, one IFI, and one weakness were identified in the areas inspected.

3. Engineering and Technical Support Activities

a. Organization and Staffing

Engineering and technical support were provided onsite by the Design Engineering Department and the P&SE Department. The inspectors held discussions with licensee personnel and reviewed documentation of selected plant activities to evaluate the engineering involvement and support of day-to-day plant operations. This support included preparing MCPs, DCPs, temporary alteration control forms (TACFs), equipment performance trending, MNCR dispositions, performing safety evaluations and engineering evaluations, failure analysis, etc.

The inspectors reviewed staffing levels for Design Engineering and P&SE. There have not been any significant changes in the staffing levels. In the P&SE Department there are a nominal 31 System Engineers (SE) and 32 Engineering Support personnel. A concern identified in the last SALP report related to the perception that the P&SE Department work load was such that the SEs were operating in a reactive rather than a proactive mode. Licensee management has taken steps to refocus the work load of the SEs to achieve a proactive position.

Some of these actions were:

- Prioritizing systems to focus greater engineering attention on those systems important to safety and reliable operation of the plant and to expend less engineering resources on those systems whose performance has little or no impact on plant safety and operation.

- Forming of a Root Cause Analysis group to relieve the SEs of the time consuming failure analysis and investigative tasks.

- Providing trending information through the Engineering Support Section at the SEs request to meet the SEs needs in monitoring and analyzing system performance.

- Developing on-line monitoring of system parameters (in an early stage of use) to save engineers time and enhance system information availability. A large amount of resources has been allocated in 1994 budget for expanding this capability.

Considering the actions taken by engineering management, the inspectors determined that the staffing levels appeared to be adequate to provide support to the plant.

b. Design Engineering

The inspectors reviewed selected activities performed by Design Engineering. Some of these activities are discussed in paragraphs 2.b. and 2.c. of this report. Other activities included NPE priority and upper tier drawing turnaround; procurement related engineering evaluation requests (EER); involvement in efforts to reduce the number of reactor trips related to equipment failures (with particular emphasis on the lightning induced trips); modifications to enhance the feedwater system in order to reduce trips related to feedwater transients; calculation reviews; design changes to support Furmanite leak repairs; erosion-corrosion program; jet pump beam failure issue; upgrade high pressure turbine; and performing peer group self assessments.

The inspectors also reviewed various trend data and monthly performance indicators for Design Engineering activities. This information showed that Design Engineering utilized 36 percent of its resources providing plant support and another 11 percent providing engineering support. The inspectors concluded that Design Engineering has provided adequate support to the plant.

c. Performance and System Engineering

Engineering and technical support were provided by the P&SE Department which included the System Engineering and Engineering Support groups. The inspectors interviewed licensee personnel and reviewed station records to evaluate engineering involvement in support of day-to-day plant operations. The type of records reviewed included but was not limited to the following:

- 01-S-16-1, Revision 6, Plant Design Change Implementation
- Management Standard No. 19, System Engineering Responsibilities
- System Engineering Self Assessment, April 26 - 30, 1993
- P&SE Functional Review, December 8, 1993
- System Engineering System Assignments and System Descriptions
- 01-S-01-1, Revision 26, GGNS Organization
- System Engineering Self Assessment Implementation Plan
- System Engineering Quarterly Reports for 1993
- System Engineering Handbook
- P&SE Division of Responsibility
- P&SE Monthly Report
- Engineering Programs Bi-Monthly Report, May/June, 1993
- 01-S-06-3, Revision 26, Control of Temporary Alterations
- Temporary Alteration Log Index
- Trend Data
- Monthly Temporary Alteration Review Forms (12 months)

The inspectors' review focused primarily on the responsibilities of the system engineers within the P&SE Department. The SEs assumed ownership, managed, and coordinated the activities related to their assigned systems. Duties and responsibilities delineated in Management Standard No. 19 and the SE Handbook, included weekly system walkdowns to observe the physical condition of the system; identify, resolve and document system problems; verify system configuration is consistent with the design basis; and, review of

key system parameters to confirm proper system operation. The SE also maintained cognizance of all maintenance, modifications, surveillance, and periodic tests in an assigned system; provided technical evaluation for temporary alterations; wrote or concurred on maintenance, operation and surveillance test procedures; and evaluated test results, trends, and system performance.

In close support of the SE, the Engineering Support group of P&SE administered major programs such as Motor Operated Valves, Leak Rate Testing, Inservice Testing, Check Valves, Relief Valves, and Thermal Performance. In addition, this group was heavily involved in the Reliability Centered Maintenance, Risk Significance Evaluation, Trip Critical, Trip Sensitive and Repetitive Failure programs. Also, diagnostic testing and analysis such as vibration, oil sampling and thermography were performed by this group.

Management oversight of engineering functions was evident through participation in daily meetings to discuss engineering problems and activities, the delineation of management expectations to SEs, face to face management meeting with small groups of engineers to discuss problems and expand on how to meet the expectations, supervisor walkdown of systems with SE approximately every 2 weeks, and development and implementation of an improvement program to enhance engineering performance. The improvement program included but was not limited to activities such as self assessment and corrective actions, development of the SE Handbook, issuance of engineering quarterly status reports, involvement in trip critical and lightning strike induced scram elimination programs to reduce reactor scrams, and establishing SE presence on the evening shift to provide immediate assistance to operations for resolution of engineering problems.

Proactive engineering involvement and reaction to emergent issues to support day-to-day plant operations was indicated through review of plant records and discussions with plant personnel. A few examples of good engineering support are described below:

- Identification of moisture in the Main Generator Exciter enclosure house air coolers during a system walkdown led to immediate corrective action to dry out the enclosure and subsequent long term action to prevent condensation in the enclosure. (Demonstrated response to an emergent issue to prevent a potential severe plant transient)

- Operations concern about potential voiding of RHR system piping which could affect pump start was investigated and resolved by SE. (Demonstrated support of plant operation)

- Identification of internal damage to B Circulating Water pump led to a controlled pre-planned repair which potentially avoided an on-line failure and serious power reduction. (Demonstrated the use of diagnostic analysis, engineering judgement and use of vendor experience to keep plant on-line)

- Evaluation of drywell cooling system components led to identification and correction of a problem causing a negative trend in temperature performance and avoidance of possible exceeding a TS limit. (Demonstrated a proactive approach)

The inspectors concluded that System Engineering has taken positive actions toward a proactive position and had been actively involved in support of plant operation.

d. Problem Identification and Resolution

The inspectors reviewed a sample of material nonconformance reports (MNCRs) to evaluate engineering involvement in plant problems. MNCRs are one method of identifying plant problems for engineering review to determine operability and problem resolution. The inspectors reviewed the following MNCRs to evaluate the adequacy of the operability assessments and problem resolutions:

MNCR No.	Problem Subject
930010	Diesel Generator Room Fan Coil Units Have Filters Not Shown On Drawings Taped To Return Registers.
930023	Chilled Water Expansion Tank Does Not Have Instrument Drain Valve As Shown On Drawings.
930027	Conduits 1AARM186 And 1AARM196 Exit Auxiliary Building Through Undocumented Penetrations
930056	RHR Heat Exchanger A Bypass Valve, Q1E12F048A, Installed With Wrong Flow Configuration- Flow Over Seat.
930106	LPCS, RCIC, and RHR Rooms Have Piping Not Insulated.
930186	Pigtail Lead Wires For Solenoid Valves N36F520 And N36F523 A&B Have Burned Cables At Terminal Board Inside Coils.

The inspectors concluded that engineering groups were involved in the identification and resolution problems. Engineering responses for identified MNCR were adequate, with reasonably descriptive evaluations and dispositions.

Violations or deviations were not identified in the areas inspected.

4. Quality Assurance (QA) Audits and Self Assessment Activities

The inspectors reviewed Quality Program audits and assessments, performance evaluations, and assessments of the Design Engineering Department and site P&SE safety related activities conducted by the Quality Programs organization. The assessments and audits were part of the overall Entergy quality assurance program at Grand Gulf. The inspectors reviewed results of the following quality assurance activities that were either completed or in progress:

* QSA-92/0027- Quality Programs Audit of the Effectiveness and Implementation of Design Control and Configuration Management.

* QSA-92/0033- Quality Programs Audit of the Adequacy of the Computer Software Quality Assurance Program.

* QSA-93/0006- Quality Programs Audit of the Fire Protection and Loss Prevention Program.

* QSA-93/0021- Quality Programs Audit of the Adequacy and Implementation of Programs Governing Qualification, Certification, and Training.

* QSA-93/0031- Quality Programs Audit of the Effectiveness of Design Change and Plant Modification Activities.

In addition to reviewing results of the above activities, the inspectors examined several Engineering Program self-assessments (e.g. the Inservice Inspection and Testing Program, the Motor Operated Valve Program, and the Environmental Qualification Program) and response memorandums to the Quality Programs assessment observations and recommendations.

Based on these reviews, the inspectors concluded that the Quality Programs organization had been actively involved in assessing engineering activities. QA audits and engineering self assessment activities have been effective in identifying areas for improvement in the engineering groups.

The inspectors reviewed an independent self assessment of system engineering activities which was conducted April 26 - 30, 1993. Areas for improvement and recommendations identified in the assessment indicated that: management expectations and how to achieve the expectations were not always clearly conveyed to the SEs; some SEs were

not fully up to speed on newly assigned systems which resulted in a reduction in the level of technical support; and time expended in activities related to design change/modifications and associated paper work limited the SEs' time devoted to monitoring system performance. Management had developed and implemented a corrective action plan for the findings identified in the self assessment. The majority of the corrective actions have been implemented in this area, including a revision to the Handbook and discussions with engineers.

The conclusion stated by the inspectors in paragraph 3.c. of this report, that system engineering was providing adequate engineering support to plant operations and maintenance, was based on activities reviewed and the fact that P&SE was achieving their major goals. This is borne out by several strengths identified in the self assessment which were:

- SE efforts to reduce the backlog of DCPs was recognized as a benefit to plant configuration control.

- SEs provided excellent responses to emergent plant problems and operations support activities.

- The designated back shift engineers were extremely responsive to the needs of operations and maintenance.

However, the above weaknesses do emphasize the need for continuing management evaluation of the SE workload. The inspectors noted in corrective actions to the assessment findings (action item 18) that management was considering the feasibility of initiating a manpower study to evaluate work load assignments and special projects. Also, a followup to the self assessment was planned for the second quarter of 1994.

The inspectors concluded that the QA audits and the engineering self assessment activities were effective in identifying areas for improvement in the engineering groups. These self assessment activities were a positive indication of management's ongoing efforts to improve engineering performance.

Violations or deviations were not identified in the areas inspected.

5. Exit Interview

The inspection scope and results were summarized on January 28, 1994, with those persons indicated in paragraph 1. The inspectors described the areas inspected and discussed in detail the inspection findings. Proprietary information is not contained in this report. No dissenting comments were received from the licensee. The following items were identified:

- Violation 50-416/94-05-01, Failure to Review and Update Fire Protection Program Elements and Documents Affected by Design Changes. (paragraphs 2.b.(1) and 2.b.(2))

- IFI 50-416/94-05-02, Review FSAR Update Information Resulting from MCP 88/1023. (paragraph 2.b.(3))

6. Acronyms and Initialisms

A/C	Air Conditioning
CFR	Code of Federal Regulations
CN	Change Notice
CRB	Change Review Board
CRD	Control Rod Drive
DBA	Design Basis Accident
DCP	Design Change Package
D/G	Diesel Generator
EER	Engineering Evaluation Request
FHA	Fire Hazards Analysis
FSAR	Final Safety Analysis Report
GGNS	Grand Gulf Nuclear Station
GPM	Gallons Per Minute
HVAC	Heating Ventilation and Air Conditioning
IFI	Inspector Followup Item
LPCS	Low Pressure Core Spray
MCP	Minor Change Package
MIL	Master Issues List
MNCR	Material Nonconformance Report
NPE	Nuclear Plant Engineering
NPEAP	Nuclear Plant Engineering Administrative Procedure
P&SE	Performance and System Engineering
PMT	Post Modification Testing
QA	Quality Assurance
RCIC	Reactor Core Isolation Cooling
RHR	Residual Heat Removal
SE	System Engineer
SSW	Standby Service Water
TACF	Temporary Alteration Control Form
TS	Technical Specifications