



**ENTERGY**

**Entergy Operations, Inc.**

P.O. Box 756

Port Gibson, MS 39150

Tel 601 437 2800

November 17, 1995

**C. R. Hutchinson**

Vice President

Operations

Grand Gulf Nuclear Station

U.S. Nuclear Regulatory Commission  
Mail Station P1-37  
Washington, D.C. 20555

Attention: Document Control Desk

Subject: Grand Gulf Nuclear Station  
Docket No. 50-416  
License No. NPF-29  
Proposed Self-Assessment

GNRO-95/00126


Gentlemen:

In accordance with the NRC's program to permit self-assessment alternatives to NRC team inspections, Entergy Operations, Inc. proposes to conduct a self-assessment at Grand Gulf Nuclear Station (GGNS) to examine the effectiveness of engineering activities, and programs and controls established for the identification, resolution and prevention of problems. The objective of the assessment is to evaluate these activities for strengths, weaknesses, or opportunities for improvement while meeting the guidance of NRC Inspection Procedure (IP) 40501, "Licensee Self-Assessments Related to Team Inspections" as an alternative to a full scope NRC inspection. Based on our discussions with the NRC Region IV staff, we understand that the staff concurs with the self-assessment option as an alternative to a full scope inspection.

Attachment 1 outlines the objective, scope, general approach, schedule, level of effort, and team qualifications. Attachment 2 provides the details of the assessment plan and Attachment 3 includes the resumes of the assessment team members.

We appreciate the opportunity to participate in this program. If you have any questions or require additional information, please contact Mr. Mike J. Meisner at (601) 437-6470.

Yours truly,

  
CRH/RWB/mtc

attachments: 1. Assessment Overview  
2. Assessment Plan  
3. Resumes of Assessment Team Members

cc: (See Next Page)

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cc:

Mr. J. E. Tedrow (w/a)  
Mr. H. W. Keiser (w/a)  
Mr. R. B. McGehee (w/a)  
Mr. N. S. Reynolds (w/a)  
Mr. H. L. Thomas (w/o)

Mr. L. J. Callan (w/a)  
Regional Administrator  
U.S. Nuclear Regulatory Commission  
Region IV  
611 Ryan Plaza Drive, Suite 400  
Arlington, TX 76011

Mr. P. W. O'Connor, Project Manager (w/2)  
Office of Nuclear Reactor Regulation  
U.S. Nuclear Regulatory Commission  
Mail Stop 13H3  
Washington, D.C. 20555

Mr. T. P. Gwynn (w/a)  
Director, Division of Reactor Safety  
U.S. Nuclear Regulatory Commission  
Region IV  
611 Ryan Plaza Drive, Suite 400  
Arlington, TX 76011

Mr. J. E. Dyer (w/a)  
Director, Division of Reactor Projects  
U.S. Nuclear Regulatory Commission  
Region IV  
611 Ryan Plaza Drive, Suite 400  
Arlington, TX 76011

## ASSESSMENT OVERVIEW

### OBJECTIVE:

The self-assessment is to be conducted to examine the effectiveness of GGNS engineering activities and GGNS programs and controls established for the identification, resolution, and prevention of problems which could degrade the quality of plant operations or safety. The overall intent of the assessment is to recognize strengths and identify weaknesses or opportunities for improvement while meeting the guidance of USNRC IP 40501 as an alternative to a full-scope NRC inspection.

### SCOPE:

The guidelines of USNRC IP 37550, "Engineering", and IP 40500, "Effectiveness of Licensee Controls in Identifying, Resolving, and Preventing Problems", are used to develop the details of the assessment plan provided in Attachment 2.

The assessment will include an evaluation of the following type of activities:

- general engineering capabilities
- design and configuration control
- system surveillance and testing
- controls for identifying, resolving, and preventing problems
- operating experience feedback
- independent review and oversight

The assessment team will be evaluating the ability of the GGNS organization, including engineering, to identify, evaluate, and resolve problems. This includes an assessment of the effectiveness of the corrective action programs and self-assessment programs in reporting problems, performing root cause analyses and correcting problems. The assessment team will also evaluate the operating experience feedback program for the effectiveness of assessing and initiating corrective actions based on information from inside and outside the GGNS organization.

The effectiveness of independent review and oversight functions will also be assessed. This includes the onsite and offsite Safety Review Committees as well as the Independent Safety Engineering Group (ISEG).

### APPROACH:

The assessment objective is to be accomplished by:

1. Assessing the effectiveness of engineering abilities and processes by focusing on a vertical slice of selected safety significant systems.

ASSESSMENT OVERVIEW (continued)

2. Assessing the effectiveness the GGNS organizations to identify, evaluate, and resolve problems by reviewing the resolution of selected issues and the quality of self-assessments.
3. Assessing the overall effectiveness of the engineering organization by examining management expectations, work backlog, training, and interface with other plant organizations.
4. Assessing the effectiveness of the independent review functions of the safety review committees and the Independent Safety Engineering Group.

The above items are not mutually exclusive. We intend to examine as many activities as possible in the vertical slice approach.

In the vertical slice approach, the team would examine various aspects of engineering functions associated with design modifications. These activities include maintaining the design bases current, ensuring that the design basis is met, that drawings reflect as-built design, that safety evaluations for changes considered all pertinent requirements, that the modification was installed in accordance with requirements, that procedures and training programs were revised if appropriate, and that post-modification testing was performed properly.

In addition to modification activities, the vertical slice assessment would include other aspects of engineering activities. For example, the technical adequacy of surveillance procedures and component or system performance monitoring programs for the selected systems would be examined. Any current issues such as system operability determinations would also be examined to determine the effectiveness of engineering in evaluating and resolving the issue.

The systems selected for inclusion in the vertical slice assessment will be based on a review of pertinent issues, events, or problems occurring within the past year with special consideration given to safety significance.

SCHEDULE:

The assessment is scheduled to begin January 3, 1996 with completion of the on-site review by January 12, 1996. A report of the completed assessment will be provided to the USNRC Regional Administrator no later than February 1, 1996.

ASSESSMENT OVERVIEW (continued)

LEVEL OF EFFORT:

The assessment team will be composed of at least six members (including the team leader). The level of effort is expected to be approximately 350 man-hours of direct inspection.

TEAM QUALIFICATIONS:

The team will consist of experienced technical personnel with expertise in their area of assignment. The five evaluators will include two or more members from outside of the GGNS organization. The resumes of the team leader and the five evaluators are included in Attachment 3.

### SELF-ASSESSMENT PLAN

#### Purpose

1. To evaluate Grand Gulf's engineering activities, particularly the effectiveness of the engineering organization to perform routine and reactive site activities.
2. To evaluate the effectiveness of GGNS controls for the identification, resolution, and prevention of issues and problems that could degrade the quality of plant operations or safety.

Grand Gulf controls for identifying, resolving, and preventing issues included in the assessment are:

- safety review committees,
- root-cause analysis programs,
- corrective action programs,
- self-assessment programs, and
- other processes that provide for the incorporation of operating experience feedback.

#### Methodology

1. The primary method for evaluation of the engineering activities is to assess the operational performance capability of a selected safety system through an in-depth, multi-disciplinary engineering review to verify that the selected system conforms to design basis requirements and is capable of performing the intended safety functions. Other systems will be selected to assess a less detailed but broader scope of engineering activities such as testing, problem resolution, performance monitoring, design and configuration control, and operating experience feedback. Generic safety significant findings will be pursued across the system boundaries on a plant-wide basis.

The system reviews will be supplemented as necessary by personnel interviews and samples of issues and assessments to adequately evaluate the general engineering capabilities and the processes for identifying, resolving, and preventing problems.

2. Prior to the assessment, the team leader will address, at a minimum, the following points:
  - a) Selection of the systems, key components, and self-assessments to be evaluated by the team based upon recent issues or problems and safety significance.
  - b) Assignments of individual team members to specific functional areas, and expectations.
  - c) A timetable of events involving team coordination activities, such as site access training, entrance and exit meetings, coordination meetings, due dates for issuance of intra-team data, etc.



SELF-ASSESSMENT PLAN (continued)

Scope

1. General Engineering Capabilities

Through the detailed system reviews, supplemented as necessary, evaluate the capability of the engineering organizations in the following areas:

- a) Engineering involvement in site activities, particularly in the resolution of technical issues. The effectiveness of communications with other departments such as maintenance, operations, and modification implementation is to be included.
- b) The extent of backlogged engineering work.

2. Design and Configuration Control

For the selected systems, evaluate several safety-significant design changes and temporary plant modifications to verify conformance with the applicable installation and testing requirements.

- a) Review the design basis and other design documents such as calculations and analyses for a selected system and determine the functional requirements for the system during accident or abnormal conditions. The review should determine if (1) the design basis is in accordance with the licensing commitments and regulatory requirements, (2) if the design bases, analyses, and associated design output documents such as facility drawings and procurement specifications are correct, and (3) if the installed system and components are tested to verify that the design bases have been met.
- b) Review the modified configuration of the selected systems and determine if the drawings which reflect the as-built design and installation match the current design documents and licensing requirements for the facility.
- c) Determine if the modified system is capable of functioning as specified by the current design documents and licensing requirements for the facility.
- d) Determine if system modifications implemented have introduced any unreviewed safety questions and if a 10CFR50.59 review or safety evaluation was appropriately documented.

SELF-ASSESSMENT PLAN (continued)

- e) Review the modification packages for the selected safety systems to ensure that all changes to the support elements have been made (pursuant to ANSI N45.2.11), including maintenance requirements and procedures, operating procedures, training documentation and training programs, periodic testing, and procurement documentation and specifications.

3. Surveillance and Testing

For the selected systems, evaluate several Technical Specification surveillances and post maintenance tests to verify that the tests and surveillances are adequate to demonstrate continued operability.

- a) Review and evaluate the technical adequacy and accuracy of Technical Specification surveillance procedures and post-maintenance tests performed in the past year.
- b) Verify that the system testing adequately ensures that the system will operate as designed under postulated accident conditions. Verify that the surveillance test procedure acceptance criteria are adequate to demonstrate continued operability.
- c) Review the component history files, looking for indications of adverse trends or recurrent test failures.
- d) Review the inservice test records for pumps and valves in the selected safety system, for technical adequacy and accuracy of the data.
- e) Determine if design engineering and system engineering personnel contribute to test procedures and if they review test results.

4. Controls for Identifying, Resolving, and Preventing Problems

- a) The assessment team will select a sample of issues, problems, and self-assessments occurring within the past year from the list below for detailed analysis to assess Grand Gulf's ability to identify and correct problems.
  - Operational events, testing, or maintenance activities (such as temporary repairs or troubleshooting activities).
  - Equipment deficiencies requiring safety evaluations or operability determinations.
  - Procedural adherence deficiencies.



SELF-ASSESSMENT PLAN (continued)

- QA audits and self-assessments.
  - Repetitive equipment deficiencies.
  - Other events or issues that may indicate weaknesses.
- b) The problems selected above will be evaluated to determine Grand Gulf's effectiveness in performing the following:
- Initial identification and characterization of the problem.
  - Proper assignment of priority and elevation of problems to proper level of management for resolution.
  - Root-cause analysis.
  - Evaluation of adverse trends or repetitive conditions.
  - Disposition of any operability/reportability issues and interim resolutions.
  - Implementation and timeliness of corrective actions.
  - Expansion of the scope of corrective actions to include applicable related systems, equipment, procedures, and personnel actions.
5. Independent Review and Operational Experience Feedback
- Evaluate the effectiveness of Grand Gulf's independent review and operational experience feedback functions through a review of activities.
- a) Evaluate the overall effectiveness of the independent safety engineering group (ISEG) by reviewing recent ISEG reports and the implementation of corrective action recommendations.
  - b) Evaluate the effectiveness of the onsite and offsite safety review committees by reviewing committee minutes, audits, or other actions initiated by the committees as follows:
    - i) Review the Plant Safety Review Committee and the Safety Review Committee meeting minutes for the past six months for items pertaining to the selected systems. Identify any discrepancies and unusual operability determinations.

SELF-ASSESSMENT PLAN (continued)

- ii) Identify what issues are reviewed by the safety committees and review the actions initiated by the safety committees to identify, assess, and correct areas of weakness.
  - iii) Review safety committee activities and discuss specific activities with selected safety committee members or safety committee support staff to gain insights and to assess the committee's effectiveness, work load, ability, and utility support for committee initiatives.
  - iv) Evaluate Grand Gulf's follow-up to items identified by the safety committees, including committee-initiated audit findings and any recurring problems.
- c) Evaluate the effectiveness of programs that implement operational experience feedback. Focus on Grand Gulf's effectiveness to assess, to inform appropriate personnel of the results, and to initiate corrective actions for information obtained both within and outside Grand Gulf's organization. Consider the following sources of information:
- Operational experience information reports (such as significant event reports (SERs), significant operating event reports (SOERs), and significant event notifications (SENs) generated by the Institute of Nuclear Power Operations (INPO).
  - 10 CFR Part 21 notifications.
  - NRC bulletins, generic letters, and information notices.
  - Reports issued by vendors.
  - Reports from other facilities under Entergy Operations' control or from similar facilities (with respect to design and vintage).
  - EPRI reports.

RESUMES OF TEAM MEMBERS

1. Jerry C. Roberts (Team Leader, EOI-Corp.)
2. Steven G. Chesnut (Pacific Gas & Electric)
3. Gary Hughes (Union Electric Co.)
4. David Shehadeh (EOI-ANO)
5. Paul A. Gropp (EOI-W3)
6. Michael A. Stein (EOI-RB)

**JERRY C. ROBERTS**  
**(Team Leader)**

**EDUCATION & TRAINING**

B.S., Nuclear Engineering,  
Mississippi State University  
Automatic Process Control for Engineers,  
University of South Florida  
Station Nuclear Engineering Course

**PROFESSIONAL  
REGISTRATIONS  
AND CERTIFICATIONS**

GGNS Licensing Program - Previous NRC SRO  
License, GGNS, Unit No. 1 License  
Number 20487, dated 10/19/86  
Middle Management Course, MSU System  
Institute for Management Development

**EXPERIENCE:**

ENTERGY OPERATIONS, INC.  
Grand Gulf Nuclear Station  
Port Gibson, Mississippi

1994 - Present

Director, Nuclear Safety & Licensing - Reports to the Vice President, Operations Support-Echelon and is responsible for directing the licensing staff in activities pertaining to monitoring and providing analysis on new and long-term generic issues, pro-active participation with the NRC and industry to achieve the resolution of generic issues, pro-active participation with the NRC and industry to achieve the resolution of generic issues, facilitating consistency on selected regulatory issues, providing short-term staff support, and coordinating Entergy Operations interface with NUMARC. In addition, is responsible for directing Corporate Quality Assurance function insures that corporate activities performed for the sites are carried out in accordance with Quality Assurance requirements. The Nuclear Assessment function seeks to ensure excellent performance in the safe operation of Entergy's nuclear stations through performance based assessments. These assessments are designed to measure operating plant performance against criteria of excellence (not regulatory compliance).

1991 - 1994

Manager, Plant Maintenance - Reports to General Manager, Nuclear Operations-GGNS, and is responsible for the safe, efficient, and cost-effective implementation of all plant maintenance activities in accordance with appropriate procedures and regulatory requirements to enable maximum power generation and plant availability.

JERRY C. ROBERTS  
(Team Leader)

1988 - 1991

Manager, Performance and System Engineering - Reports to the GGNS General Manager and is responsible for the safe, efficient, and cost-effective implementation of all plant engineering activities in accordance with appropriate procedures and regulatory requirements to enable maximum power generation and plant availability.

1987 - 1988

Manager, Plant Modification & Construction - Promoted to (Acting) Manager, Plant Modification and Construction in April 1987. In June was promoted to Manager, Plant Modification and Construction. Reported to the GGNS Site Director, and was responsible for planning, scheduling and implementing major maintenance and modification activities during both outage and non-outage periods at GGNS. This included installation and documentation of all modification work activities; maintenance of the interface with Plant Staff and NPE for outage activities; coordination of all assigned work activities such as modifications, major maintenance activities, retests, etc., being performed during outage and non-outage periods; and establishment and implementation of all design changes at GGNS. Also served as Duty Manager and Emergency Director for the GGNS General Manager.

1978 - 1987

Startup Test Supervisor - Organized and issued Plant Startup Manual and participated in its writing, design review and correction of liquid and solid radioactive waste systems; preparation of liquid and solid radioactive waste systems, and containment integrated leak rate test preoperational test procedures; review of construction and acceptances of radioactive waste building and facilities; general engineering support to other Startup Test Supervisors and their systems.

Group Leader - Supervise startup engineers responsible for radwaste systems, integrated leak rate test (ILRT) and local leak rate test (LLRT), turbine systems, heating ventilation and air conditioning, residual heat removal, and BOP water systems.



**JERRY C. ROBERTS**  
**(Team Leader)**

Assistant Startup Supervisor - Reported to the Startup Supervisor. Provided assistance to the Startup Supervisor in the supervision of preoperational and acceptance test programs and coordination of day to day operations and maintenance support.

Startup Supervisor - Reported to the Startup Manager, responsible for supervision of the preoperational and acceptance test programs and preparations for the Power Ascension Test program. Responsibilities included the coordination of testing activities to meet the project schedule, approval of test procedures, coordination with Bechtel-CTO, and coordination with plant staff for operations and maintenance support.

Startup Manager/Superintendent - Reported to the General Plant Manager/Manager Plant Operations, responsible for closeout of Phase I systems punchlist (including applicable testing, maintenance and design change activities), Phase II systems completion and testing, and implementation of power ascension test program. During this time provided support to Technical Engineering Organization by overseeing DCP approval, implementation and closeout process and coordinating System engineering functions during surveillance rewrite program.

Technical Support Superintendent - Reported to the Manager, Plant Operations, responsible for Results Engineering, Reactor Engineering, Shift Technical Advisors, and Startup Test Group. Special assignments have included Manager, RPD of Technical Specification rewrite. Routine responsibilities include coordinating surveillance program/implementation and approval of surveillance procedures. Reporting to RF01 Outage Director also substituted for Backshift Outage Manager.

Technical Assistant to Manager, Plant Support - As the Technical Assistant to Manager, Plant Support, reported to the Manager, Plant Support and assisted in his day-to-day duties. Such duties are associated with Technical Support, Warehousing, and Security.

JERRY C. ROBERTS  
(Team Leader)

GEORGIA POWER COMPANY

1974

Test Engineer - Responsible for review of systems in order to set instrumentation calibration, logic checks, and functional checks. Review and approval of completed data packages.

Preoperational Test Engineer - For completion of local leak rate testing to complete containment integrated leak rate test, developed and performed functional and logic checks of emergency diesel generator systems.

Fuel Loading Engineer - Alternated between refueling floor and control room to direct and verify fuel loading operations.

Startup Engineer - For initial criticality through five to ten percent power testing.

1974 - 1978

INGALLS SHIPBUILDING

Radiological Engineer - Responsible for the following duties to support the refueling and overhaul of nuclear submarines: man-rem reduction, decontamination, radioactive waste packing, and processing shipyard radiation emergency plan.

**STEVEN G. CHESNUT**

**EDUCATION & TRAINING**

B.S., Nuclear Engineering,  
University of California

**PROFESSIONAL  
REGISTRATIONS  
AND CERTIFICATIONS**

Senior Licensed Operator Certification, 1993  
Advanced Station Nuclear Engineering  
Certification

**EXPERIENCE:**

**PACIFIC GAS & ELECTRIC COMPANY**

3/95 - Present

**Primary Systems Group Supervisor**

The Primary Systems Group is responsible for all maintenance, system and design engineering functions for the following systems: Reactor Coolant System, Spent Fuel Pool Cooling, NSSS Sampling, Containment, Fuel Handling and Transfer Systems, and Reactor Assembly/Disassembly activities.

10/91 - 3/95

**Reactor Engineering Group Supervisor**

The Reactor Engineering Group is responsible for the following areas: SNM Control and Accountability, Reactor Protection and Core Physics Surveillance Testing, Operations Support, Fuel Movement and Inspection, Fuel Performance, Low Power Physics and Power Ascension Testing.

7/86 - 7/91

**Nuclear Systems Engineer, Reactor Coolant System Engineer**

Responsibilities include monitoring of system performance trends, evaluation and resolution of system problems, interface with design engineering, perform technical reviews and safety evaluations, act as a task problems, interface with design engineering, perform technical reviews and safety evaluations, act as a task coordinator for multi-disciplined repair and maintenance efforts, review regulatory submittals and coordinator for multi-disciplined repair and maintenance efforts, review regulatory submittals and operating experience assessments and provide readiness for restart evaluations following plant outages.

**STEVEN G. CHESNUT**

**BECHTEL POWER CORPORATION**

1/83 - 7/86

**Resident Mechanical Engineer, Diablo Canyon  
Nuclear Power Plant**

Responsible for: providing technical support to startup, general construction and the Operations Department, covering both primary and Balance of Plant Systems; preparation of design changes to the various plant systems to resolve startup and construction difficulties and to support changing systematic requirements and to support various project studies such as jet impingement, high energy line break, compartment pressurization and masonry block wall failure impact.

1/82 - 1/83

**Nuclear/Mechanical Equipment Qualifications  
Engineer**

Responsible for demonstrating the capability of safety related equipment to perform its design function during normal and transient conditions by assessing the effects of a number of environmental and mechanical stresses such as: temperature, pressure, radiation, vibrations, and seismic. Extensive use of ASME and IEEE Codes and Standards.

DR. GARY A. HUGHES

EDUCATION & TRAINING

B.S. Electrical Engineering  
University of Missouri-Columbia  
M.S. Nuclear Engineering  
University of Missouri-Columbia  
Graduate U.S. Naval Nuclear Power School  
Ph.D. Nuclear Engineering  
University of Missouri-Columbia

PROFESSIONAL  
REGISTRATIONS  
AND CERTIFICATIONS

PWR Senior Reactor Operator Systems Theory/  
Shift Advisor PWR Simulator Course

EXPERIENCE:

Union Electric Company  
Callaway Nuclear Power Plant

1981 - Present

Supervising Engineer, Nuclear Safety - Nuclear Safety Department is made up of the Independent Safety Engineering Group and the Shift Technical Advisors and is responsible for the Callaway Operating Experience Program.

Serves as secretary for the Callaway Plant Nuclear Safety Review Board and manages independent assessments.

1979 - 1981

Ph.D. Candidate, Nuclear Engineering  
University of Missouri-Columbia

Research Assistant - Held Research Assistant position at Murr and Teaching Assistant position while completing Ph.D.

1974 - 1979

U.S. Navy

Active Duty Commissioned Officer - Various assignments including Assistant Engineer, Division Officer and Electrician on board a nuclear submarine.



**DAVID SHEHADEH**

**EDUCATION & TRAINING**

B.S., Electrical Engineering,  
Cairo University, Egypt  
Second Degree Honors (1963)

**PROFESSIONAL  
REGISTRATIONS  
AND CERTIFICATIONS**

Michigan Registered Professional Engineer  
PWR Simulator Training (Combustion Engineering)

**EXPERIENCE:**

**ENTERGY OPERATIONS, INC.**  
**Arkansas Power & Light**

1987 - Present

**Senior Lead Engineer**

Responsibilities included development of electrical design changes and lead for various multi-discipline design change packages for ANO. Assignments also included lead activities for major programs and upgrades, as well as oversight for contractor performed projects. Major projects included:

- Electrical Drawing Upgrade Project - Electrical equipment inspection and drawing verification and update. This includes reporting discrepancies of the protective relaying calculation, PDMS data and SIMS component data (selected fields only).
- ANO 1&2 Protective Device Coordination Studies - Included calculations for relay/device setpoints for 6.9 Kv, 4.16 Kv, 480 volt, 125 VDC, and 120 VAC vital plant buses.
- ANO Unit 1 under voltage study and implementation

Project design responsibilities included project scoping and preliminary design, review of licensing and design bases, 10CFR50.59 review, engineering calculations and evaluations, equipment specifications and procurement, markup of drawing changes, and assembly of final design change package. In addition, independent review was provided for various calculations, reports, DCPS, etc.

## DAVID SHEHADEH

1982 - 1987

### Availability Senior Engineer

Availability and Reliability Engineer, Root Cause Analysis, GADS, NPRDS Systems, PRA and Fault Analysis. Served on NPRDS Users Group with INPO for 3 years. Served as B&W Owners Group availability committee covering several projects such as reactor trip breakers monitoring programs, availability reports, PRZ heater replacement, etc.

1978 - 1982

### Production and Senior Engineer

Project design and reviews of electrical designs including calculation, preparation of design packages, review of SAR updates and review of Bechtel designs.

1967 - 1978

### Senior Associate Electrical Engineer City of Detroit Water and Pollution Abatement Programs

As Lead Electrical Engineer for several pollution control programs sponsored by the U.S. Federal Government and the state of Michigan, five electrical engineers worked under my direct supervision on these projects. The projects included building very large incinerators, oxygenation tanks and aerators with 9000 HP compressors, large capacity tanks including two 180 tons/day oxygen generating facilities. Started one 600 MGD water treatment plant and design/startup of the electrical portions of a 600 MGD pumping facility.

1963 - 1967

### Electrical Engineer Government of Kuwait

Served in the Ministry of Telephone and Telegraph in various capacities, telephone exchange maintenance, network planning and construction, cable pressurization project and training facilities.

**PAUL A. GROPP**

**EDUCATION & TRAINING**

BSEE, Purdue University

**PROFESSIONAL  
REGISTRATIONS  
AND CERTIFICATIONS**

Management (SRO) Certification at  
Waterford 3

**EXPERIENCE:**

1984 - Present

Entergy Operations, Inc.

Plant Engineer at Waterford 3 in I&C discipline.  
System Engineer at Waterford 3 for the reactor  
protection system, Excore Nuclear  
Instrumentation, Control Rod Drives, and Process  
Analog controls.

Mechanical System Engineering Supervisor for all  
Waterford 3 NSSS and BOP Mechanical System  
Engineers.

Design Engineering Mechanical Specialties  
Supervisor for all valve programs and mechanical  
design basis documents. Also primary oversight  
for Generic Letters 89-10 (MOVs), 89-13 (Service  
Water), 92-01 (Reactor Vessel Integrity), and  
95-07 (Pressure Locking and Thermal Binding).

1971 - 1984

Public Service Company of Indiana

Plant Engineer at Cayuga Station (2-500MW coal).  
Electrical Maintenance Supervisor at Gibson  
Station (5-650MW coal).  
Design Engineer for coal and nuclear plants  
including the later cancelled Marble Hill  
Nuclear Station (2-1150MW Westinghouse  
reactors).

**MICHAEL A. STEIN**

**EDUCATION & TRAINING**

B.S. Civil Engineering  
Massachusetts Institute of Technology

**PROFESSIONAL  
REGISTRATIONS  
AND CERTIFICATIONS**

Registered Professional Engineer in  
Civil Engineering in the State of Louisiana

**EXPERIENCE:**

1986 - Present

Entergy Operations, Inc.  
Gulf States Utilities  
River Bend Station

Project Manager in the Engineering organization responsible for the resolution of the Thermo-Lag issue. Also responsible for the site 10CFR50.59 Safety Evaluation Program.

Director of Plant Engineering responsible for the Electrical/I&C, Civil/Structural, and Balance of Plant Mechanical design disciplines.

Supervisor of Balance of Plant Mechanical Engineering responsible for the design of non-NSSS mechanical systems.

Supervisor of Civil/Structural Engineering responsible for the design of all structural aspects of the plant including pipe stress analysis, pipe support design, and electrical support design in addition to the traditional structural aspects of the plant.

1976 - 1986

Stone and Webster Engineering Corporation  
Boston, MA

Performed structural analysis for main structures as well as support assemblies for River Bend Station, Nine Mile Point 2 and Shoreham Nuclear Power Station. Supported the construction activities on site at Shoreham and River Bend Nuclear Power Plants. Specialized in the seismic analysis of structures and support systems.