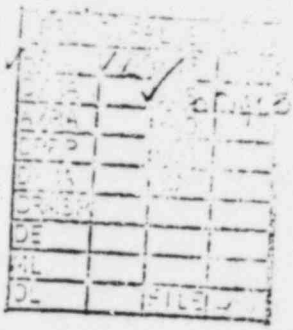
UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

JUL 0 8 1983



MEMORANDUM FOR: R. F. Warnick, Director
Office of Special Cases, Region III

FROM: James M. Taylor, Director
Division of Quality Assurance, Safeguards,
and Inspection Programs
Office of Inspection and Enforcement

SUBJECT: MIDLAND CONSTRUCTION COMPLETION PROGRAM
(DOCKET NOS. 50-329/330)

We have reviewed the Consumers Power Construction Completion Program for Midland as requested in your June 23, 1983 memorandum. Our comments are enclosed. The majority of the comments were discussed with J. Harrison on July 6, 1983.

In addition we have reviewed the Stone & Webster proposal to conduct the third party assessment of the Construction Completion Program. We have concluded that Stone & Webster Engineering Corporation has sufficient independence and competence to perform the third party assessment of the Construction Completion Program. However, there is a concern that the size of the proposed Stone & Webster staff to perform the third party assessment is too small. Some assurance that an adequate staff will be available to conduct the third party assessment is needed.

If you have any questions about the comments please call.

James M. Taylor, Director
Division of Quality Assurance, Safeguards
and Inspection Programs
Office of Inspection and Enforcement

Enclosure:
Comments

cc w/enclosure:
D. Eisenhut, NRR
T. Novak, NRR
E. Adensam, NRR

JUL 15 1983

Warnick

JUN 2 3 1983

MEMORANDUM FOR: D. G. Eisenhut, Director, Division of Licensing, NRR
J. M. Taylor, Director, Division of Quality Assurance, Safeguards, and Inspection Programs, IE

FROM: R. F. Warnick, Director, Office of Special Cases

SUBJECT: REQUEST FOR REVIEW OF CONSUMERS POWER COMPANY FINALIZED CONSTRUCTION COMPLETION PROGRAM

The attached CPCo Construction Completion Program submittal of June 10, 1983, is forwarded for your review and approval. Please provide any comments or questions to me by July 1, 1983. The program as submitted is a compilation of all prior CPCo submittals with revisions incorporated. The review and approval of the CCP Quality Verification Plan Statistical Sampling Plan, Appendix C, is not needed at this time. This sampling plan should, however, be reviewed and commented on by September 2, 1983.

Region III has completed a preliminary review and has given the licensee permission, on June 20, 1983, to begin team training at their risk pending final program approval by the NRC.

Your cooperation with us is appreciated.

Original signed by
J. G. Harrison

for R. F. Warnick, Director
Office of Special Cases

Attachment: As stated

cc w/o attachment:
DMB/Document Control Desk (RIDS)

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OFFICE ▶	RIII					
SURNAME ▶	Gardner/ls	Harrison	Warnick	Lewis	Davis	Keppler
DATE ▶	6/23/83			6/23	6/22/83	6/23/83

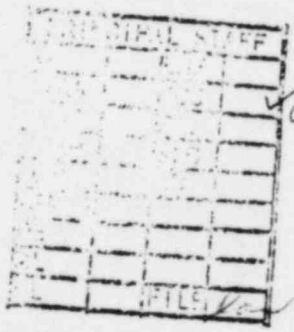
NRC FORM 318 (10-80) NRCM 0240

OFFICIAL RECORD COPY

James W Cook
Vice President - Projects, Engineering and Construction

General Offices: 1945 West Parnall Road, Jackson, MI 49201 • (517) 788-0453

June 3, 1983



Mr J G Keppler, Administrator, Region III
Nuclear Regulatory Commission
799 Roosevelt Road
Glen Ellyn, IL 60137

MIDLAND NUCLEAR COGENERATION PLANT
MIDLAND DOCKET NOS 50-329, 50-330
Construction Completion Program
File: 0655 Serial: 23151

References

1. Letter to J W Cook, dated December 30, 1982, from NRC Region III regarding Construction Completion Program.

2. Letter to Mr J G Keppler dated January 10, 1983, from Mr J W Cook regarding Construction Completion Program.

3. Letter to Mr J W Cook dated March 28, 1983 from Mr J G Keppler regarding Construction Completion Program.

4. Letter to Mr J G Keppler dated April 6, 1983 from Mr J W Cook regarding Construction Completion Program third party overview.

5. Letter to Mr J G Keppler dated April 22, 1983 from Mr J W Cook regarding Construction Completion Program.

On December 2, 1982 Consumers Power Company met with Mr Warnick and other members of your staff to discuss the general concept of our proposed Construction Completion Program. A detailed description of this program was submitted on January 10, 1983 (Reference 2). The program was further discussed with you in a public meeting in Midland, February 8, 1983. We have also provided formal responses to your questions (Reference 3) in References 4 and 5.

The enclosure to this letter is an integration of all previous correspondence on the Construction Completion Program, as well as the development of program details that have occured since December 2, 1983. We believe that this document constitutes sufficient information on the program commitments to warrant your approval of the program. You will also find contained within the

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program a controlled mechanism for review and approval for revisions that future needs and experience may dictate.

The Construction Completion Program is a positive step in the overall advancement of Project goals. It represents the best efforts of Project Management, support and Quality Assurance personnel. We believe it will produce an improvement in Project installation and inspection status, systems construction and QA implementation. The quality verification effort should provide increased confidence of the NRC that the Plant has been properly built. Other aspects of the Program, including the measure to improve ongoing inspections and scheduling interfaces, should contribute to that result. This Program, together with Consumers Power Company commitments regarding quality assurance and remedial soils work, can establish a basis for improved relations between the Company and the NRC Region group assigned to inspect Midland. The Construction Completion Program demonstrates the Company's responsiveness to both NRC concerns and the particular needs of this Project. It is our expectation that the Program, created out of a desire to enhance the orderliness and quality of construction, will achieve its intended purpose and lead to the successful "completion of construction" of the Midland Plant in accordance with regulatory requirements.

We trust this submittal fulfills your request for written information regarding the Construction Completion Program. In response to a specific NRC request, we will notify Mr Harrison of your staff at the conclusion of our Construction Completion Program Management review activities described in Section 5 of the enclosure. At that time, Mr Harrison can inform us of what audit or review activities the Region desires regarding the Construction Completion Program implementation.

James W. Cook

JWC/DMB/psd

CC Atomic Safety and Licensing Appeal Board
CBechhoefer
FPCowan, ASLB
JHarbour, ASLB
DSHood, NRC
MMCherry
RWHernan, NRC
RJCook, Midland Resident Inspector
FSKelley
HRDenton, NRC
WHMarshall
WDPaton, NRC
WDShafer, NRC
RFWarnick, NRC
BStamiris
MSinclair
JJBishop

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CONSUMERS POWER COMPANY
Midland Units 1 and 2
Docket No-50-329, 50-330

Letter Serial 23151 Dated: June 3, 1983

At the request of the Commission and pursuant to the Atomic Energy Act of 1954, and the Energy Reorganization Act of 1974, as amended and the Commission's Rules and Regulations thereunder, Consumers Power Company submits its Construction Completion Program.

CONSUMERS POWER COMPANY

By J W Cook
J W Cook, Vice President
Projects, Engineering and Construction

Sworn and subscribed before me this 4th day of June, 1983.

Beverly A. Avery
Beverly A. Avery Notary Public
Jackson County, Michigan

My Commission Expires January 16, 1985

MIDLAND NUCLEAR COGENERATION PLANT
Docket No-50-329, 50-330

CONSTRUCTION COMPLETION PROGRAM

Consumers Power Company
June 3, 1983

TABLE OF CONTENTS

CONSTRUCTION COMPLETION PROGRAM

Executive Summary

The Construction Completion Program has been formulated to provide guidance in the planning and management of the construction and quality activities necessary for completion of the construction of the Midland Nuclear Cogeneration Plant. Construction completion is defined in this Plan as carrying all systems to the point they are turned over to Consumers Power Company for component checkout and preoperational testing. The Construction Completion Program does not include the Remedial Soils Program which is treated in separate interactions between Consumers Power Company and the Nuclear Regulatory Commission.

Background

The Construction Completion Program was developed in response to a number of management concerns that have been identified during the period preceding the initiation of the Program. The Midland Project had been proceeding at a high level of activity as it approached completion. The final transition from area construction to system completion, using punch lists, has been difficult for most nuclear projects. The Midland Project has not escaped these difficulties which have been compounded due to the congested space and the continuing numerous design changes, both generally attributable to the age of the Project. These factors lead to the need for improved definition of work status, increased emphasis on overall Project objectives as well as continued focus of construction and inspection resources on completion of systems for short-term milestones and increased effort to complete engineering ahead of field installation.

The Midland Project has been criticized by the NRC regional office as not having met their expectations for implementation of the Project's Quality Assurance Program. The result has been that the Project management has too often, during the months preceding this Program, been in a reactive rather than proactive posture with regard to quality assurance matters.

In recognition of these conditions, management has concluded that a change in approach was needed to effectively complete the Project while maintaining high quality standards.

Objectives

The development of the Program has considered the Project's current status and recent history and attempts to address the underlying or root causes of the problems currently being experienced. In order to develop the Program the following overall objectives were established under three general headings. The Program Must:

Improve Project Information Status By:

- Preparing an accurate list of to-go work against a defined baseline.
- Bringing inspections up-to-date and verifying that the quality of completed work is acceptable.
- Maintaining a current status of work and quality inspections as the Project proceeds.

Improve Implementation of the QA Program By:

- Expanding and consolidating Consumers Power Company control of the quality function.
- Improving the primary inspection process.
- Providing a uniform understanding of the quality requirements among all parties.

Assure Efficient and Orderly Conduct of the Project By:

- Establishing an organizational structure consistent with the remaining work.
- Providing sufficient numbers of qualified personnel to carry out the program.
- Maintaining flexibility to modify the Plan as experience dictates.

Description

The Construction Completion Program entails a number of major changes in the conduct of the final stages of the construction process and can be described in summary as a two-phase process.

First, after certain necessary preparations, the safety-related systems and areas of the plant will be systematically reviewed. This first phase will be carried out on an area-by-area basis, but will be accomplished mainly by teams organized with systems responsibility and a separate effort to verify the completed work. The product from this phase of the program will be a clear status of remaining installation work and a current inspection status which provides quality verification of the existing work. The teams organized to carry out this first phase will continue to function in the second phase as the responsible organizational units to complete the work.

In order to achieve its complete set of objectives, the Program contains a number of activities and elements that support and are linked to the two major phases described above. The major components of the Plan, which are discussed in more detail in the balance of this report, can be described as follows:

- A significant reduction in the construction activity in the safety-related portion of the plant, material removal and a general cleanup has been carried out in preparation for installation and inspection status assessment and quality verification activities.

- A review has been made of equipment status to assure that the proper lay-up precautions have been implemented to protect the equipment until the installation work is completed.

- The integration of the Engineer/Constructor QC function into the Midland Project Quality Assurance Department (MPQAD) under Consumers Power Company management has been completed.

- MPQAD is carrying out a recertification program of QC inspectors, and review of the inspection procedures to be utilized.

- The completion teams are being organized, staffed and trained according to procedures developed to define the team's work process.

- The completion teams will 1) accomplish installation and inspection status assessment, 2) complete installation and ensure quality inspections are performed and 3) determine that all requirements have been met prior to functional turnover for test and operation.

- Quality verification of completed work will be carried out in parallel with installation and inspection status activities of the completion teams.

- A series of management reviews are being carried out to carefully monitor the development and conduct of the Program and to revise the plan as appropriate.

- Review and resolution will proceed on outstanding issues related either to QA program or QA program implementation as raised by the NRC or third party overviews of the Project.

- Third party reviews are being undertaken to monitor Project performance and to carry out the NRC's requirements for independent design verification.

Status

The Program was initiated on December 2, 1982 by limiting certain ongoing safety-related work and starting preparations for the phase-one work of status assessment and quality verification activities. Since the Program also has incorporated a number of commitments made to the NRC during the period prior to December 2, 1982, activities in support of these commitments such as QC integration into MPQAD and the recertification of QC inspectors, had been initiated prior to December.

Milestones for each element of the Plan are enumerated in the text. In general, preparation for the Phase 1 activities are in place and the

management reviews are being held. A pilot team is developing the procedures and training requirements. It is expected that the Phase 1 will begin shortly.

The Program provides for the Phase 1 results on an area, system, or partial system to be reviewed and evaluated prior to initiating Phase 2 system completion work on that system or partial system. Management will monitor both process readiness and Phase 1 evaluation results.

The major areas of continuing safety-related work outside the Construction Completion Program are NSSS construction as performed by B&W Construction Co, HVAC work under the Zack subcontract, the Remedial Soils Program and post-turnover punch list work released to Bechtel Construction by Consumers Power Company.

During the continuing implementation of the Program in 1983, the NRC Region III can use the Plan to monitor safety-related construction activities at the site. Since a substantial portion of the Plan directly relates to commitments made to NRC management, Consumers Power Company intends to schedule periodic reviews of Program status and progress with the NRC.

1.0 INTRODUCTION

The Construction Completion Program has been formulated to provide guidance in the planning, and implementation of the construction and quality activities necessary for completion of the construction of the Midland Nuclear Cogeneration Plant. Construction completion is defined in this Plan as carrying all systems to the point they are turned over to Consumers Power Company for component checkout and preoperational testing. The Construction Completion Program does not include the Remedial Soils Program which is treated in separate interactions between Consumers Power Company and the Nuclear Regulatory Commission. The Construction Completion Program will be referred to as the Program in this document which contains the Plan for Program development and implementation.

Background

The Construction Completion Program was developed in response to a number of management concerns that were identified during the period preceding the initiation of the Program. The Midland Project had been proceeding at a high level of activity as it approached completion. The final transition from area construction to system completion, using punch lists, has been difficult for most nuclear projects. The Midland Project has not escaped these difficulties which have been compounded due to the congested space and the continuing numerous design changes, both generally attributable to the age of the Project. These factors lead to the need for improved definition of work status, increased emphasis on overall Project objectives as well as continued focus of construction and inspection resources on completion of systems for short-term milestones and increased effort to complete engineering ahead of field installation.

The Midland Project has been criticized by the Nuclear Regulatory Commission regional office as not having met their expectations for implementation of the Project's Quality Assurance Program. The result has been that the Project management has too often, during the months preceding this Program, been in a reactive rather than proactive posture with regard to quality assurance matters.

In recognition of these conditions, Consumers Power Company concluded that a change in approach is needed to effectively complete the Project while maintaining high quality standards.

Objectives

The development of the Program has considered the Project's current status and recent history and attempts to address the underlying or root causes of the problems currently being experienced. In order to develop the Program, the following overall objectives were established under three general headings. The Program must:

Improve Project Information Status By:

- Preparing an accurate list of to-go work against a defined baseline.
- Bringing inspections up-to-date and verifying that the quality of completed work is acceptable.
- Maintaining a current status of work and quality inspections as the Project proceeds.

Improve Implementation of the QA Program By:

- Expanding and consolidating Consumers Power Company control of the quality function.
- Improving the primary inspection process.
- Providing a uniform understanding of the quality requirements among all parties.

Assure Efficient and Orderly Conduct of the Project By:

- Establishing an organizational structure consistent with the remaining work.
- Providing sufficient numbers of qualified personnel to carry out the Program.
- Maintaining flexibility to modify the Plan as experience dictates.

Plan Contents

The Program was initiated on December 2, 1982 by limiting on-going work on Q-systems to pre-defined tasks and preparing the major structures housing Q-systems for an installation and inspection status assessment and verification of completed work. The relationship of the major elements of the Plan is shown in Figure 1-1. The sections of the Plan address the following major activities:

The buildings are being prepared for a status assessment of incomplete work and verification of completed work.

A new quality organization that integrates the QA and QC functions under a Consumers Power Company direct reporting relationship has been established. As part of this transition, the Engineer/Constructor QC inspectors are being recertified to increase confidence in the quality inspection performance.

The overall Plan for the Program is being developed in two major phases.

The first phase includes:

- A team organization assigned on the basis of systems or areas developed to determine present installation and inspection status. The installation status assessment includes a comparison of partially installed work to current design and identification of remaining work items for completion. The inspection status assessment includes performing additional inspections on partially completed or completed work to bring them up to date. A closely coordinated effort involving the Engineer/Constructor and Consumers Power Company (QA/QC, testing and construction) personnel will improve quality performance.

- The quality verification of completed work initiated on a 100% basis using re-certified inspectors.

The second phase includes:

- Work completion, following quality verification, installation and inspection status assessment under responsibility of the team organization.

- An integration of the QC inspection process for new work with the completion work to ensure adequate quality performance.

The first phase implementation of the Program will be initiated with a review of the process, procedures and team assignments that will be used. The plan for verification of completed work will be reviewed separately. The teams will conduct the installation and inspection status assessment; verification of completed and inspected work will proceed, as planned, in coordination with the team effort. Following Phase 1 completion of the first verification and status assessment segment, a management review will be made of the evaluation of the initial Phase 1 results and the process and procedures for Phase 2 activities. In second phase Program implementation, the assigned team will plan and carry out the remaining work needed for completion including QC inspections.

The adequacy and completeness of the quality program will be reviewed, as appropriate, on an ongoing basis, taking into consideration questions raised by NRC inspections and findings by third party reviewers.

Independent assessments of the Midland Project will provide management and NRC with evaluations of Project performance.

The on-going work to protect plant equipment and systems will be augmented as necessary to provide adequate protection during implementation of this Plan.

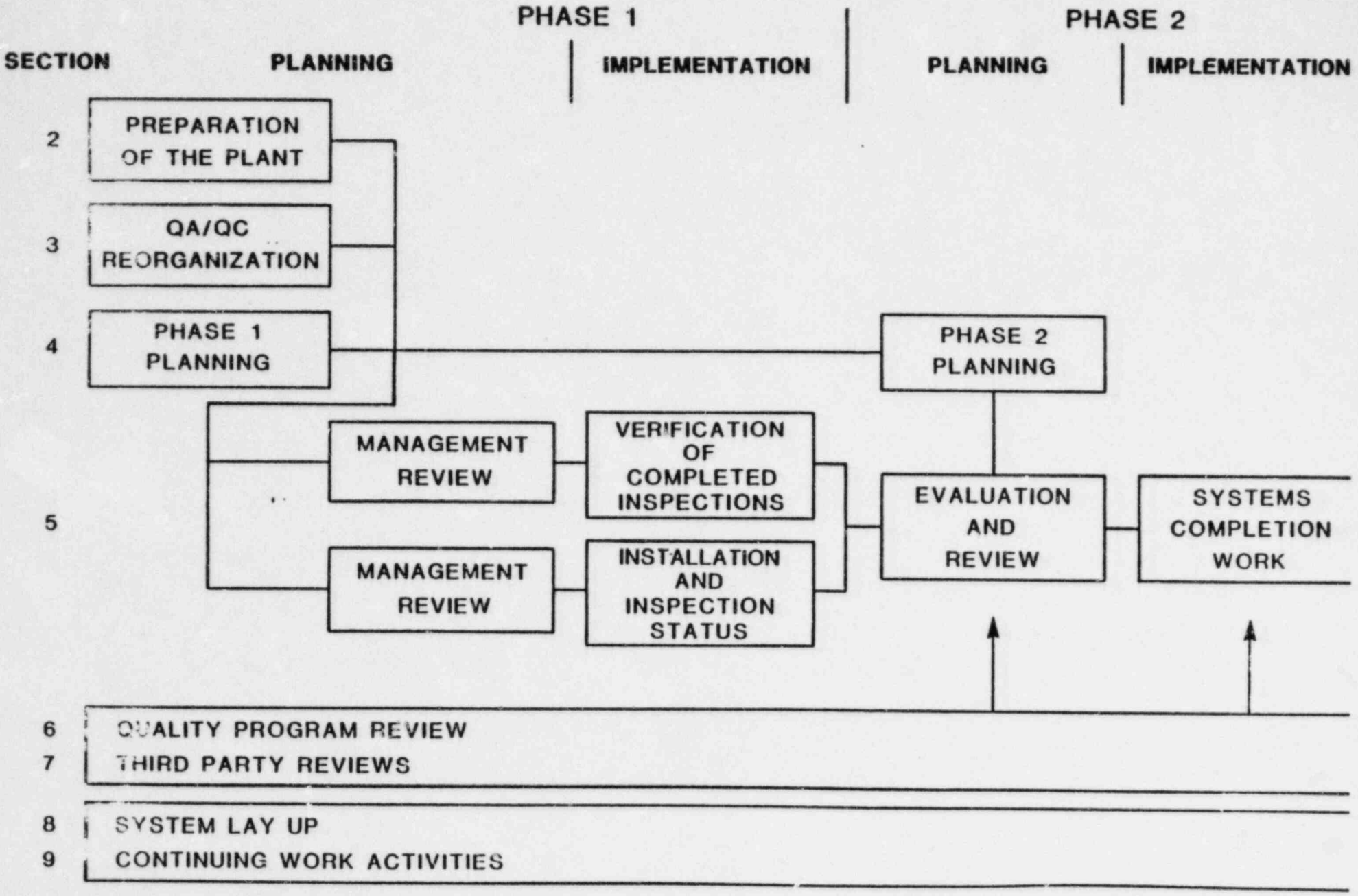
Work on Q-Systems has been limited to specific activities. This limitation permits important work to proceed outside of the Construction Completion Program while allowing building preparation for status assessment and verification activities on that work which is under the Construction Completion Program.

Summary

The program is a comprehensive plan to complete the Midland Nuclear Cogeneration Plant in a manner that assures the licensibility of the plant when construction is complete. Cost and schedule for completion of the Midland Project are also a concern for Consumers Power Company. The Company believes that the most efficent way to project completion is to understand the current plant status, establish the requirements to finish the project and complete the work according to these requirements. Thus the theme of the Construction Completion Program to verify past work and proceed on future work with improved performance is consistent with this philosophy.

FIGURE 1-1

CONSTRUCTION COMPLETION PROGRAM SCHEMATIC



2.0 PREPARATION OF THE PLANT

2.1 Introduction

The preparation of the Plant cleared the auxiliary, diesel generator and containment buildings and the service water pump structure of materials, construction tools and equipment and temporary construction facilities.

2.2 Objective

To allow improved access to systems and areas for the Program activities.

2.3 Description

The preparation activities minimize obstacles and interferences for the Program activities. This is being accomplished through the following steps.

1. Limitation of Q-work to specific activities and areas defined in Section 9 resulting in substantial work force reduction.

2. Removal and storage of construction tools and equipment, and temporary construction facilities (scaffolding, etc) from the buildings identified in Section 2.1.

3. Removal, control and storage of uninstalled materials from the buildings identified in Section 2.1.

4. Appropriate housekeeping of all areas following material and equipment removal.

The preparation for each area will be complete before initiating further Program activity. The on-going work described in Section 9 will continue as scheduled during the preparation of the Plant for CCP activities.

2.4 Milestones

Complete preparation of affected areas of the plant. (Complete)

3.0 QA/QC ORGANIZATION CHANGES

3.1 Introduction

The Consumer Power Company's Midland Project Quality Assurance Department (MPQAD) was expanded to assume direct control of site project quality functions including Engineer/Constructor QC except ASME. The new organization is described below. The transferred QC Inspectors are being recertified as part of this transition.

3.2 Objectives

Establish New QA/QC Organization

Establish an integrated organization which includes the transition of Engineer/Constructor QC to MPQAD while accomplishing the following objectives:

1. Establish direct Consumers Power Company control over the QC inspection process.

2. Establish the responsibilities and roles of the QA and QC Departments in the integrated organization.

3. Use qualified personnel from existing QA and QC departments and contractors to staff key positions throughout the integrated organization.

Recertify QC Inspectors

Ensure that those Quality Control inspection personnel transferring to MPQAD will be trained and recertified in accordance with MPQAD Procedure B-3M-1.

3.3 Description

Establish New QA/QC Organization

A new organization was implemented under Consumers Power Company and has been described in the appropriate Topical Report (CPC-1A), the FSAR and quality program manuals (Volume II, BQAM and NQAM). Changes to CPC-1A were approved by NRC on March 14, 1983.

Features of the new organization include:

1. Lead QC Supervisors report to a QC Superintendent who reports to the MPQAD Executive Manager. Any required support from Bechtel Corporate QC and QA functions (except ASME N-Stamp activities) is provided at the level of the MPQAD Executive Manager.

2. The MPQAD Executive Manager will review the performance of [illegible] personnel in his department.

3. QA will develop and issue Quality Control inspection plans and be responsible for the technical content and requirements of such plans. QC will be responsible to implement these plans.

4. QA will continue to monitor the Quality Control inspection process to insure that program requirements are satisfactorily implemented.

5. MPQAD will continue to use Bechtel's Quality Control Notices Manual (QCNM) and Quality Assurance Manual (BQAM) as approved for use on the Midland Project.

6. ASME requirements imposed upon a contractor as N-Stamp holder will remain with that contractor. MPQAD QA will monitor the implementation of ASME requirements.

An organization chart (Fig 3-1) showing current reporting relationships is attached. The official organization chart is contained in project procedures.

Training of MPQAD Personnel

MPQAD initiated a program in late 1982 to retrain and recertify all Engineer/Constructor QCE's (Inspectors) to existing PQCIs. A significant number of QCE's have been recertified under this process. Early in 1983, MPQAD decided to terminate recertification of old PQCIs except in selected cases, focus efforts on completing the review and revision of PQCIs, and then train and recertify to the new PQCIs.

MPQAD current plans are to re-train and re-certify all inspectors to the revised PQCIs. As a part of this activity, the Project Quality Control Instructions (PQCI) are undergoing a complete review to assure:

Attributes that affect the safety and reliability of specific components, systems and structures are identified for verification.

Accept/reject criteria are clearly identified.

Appropriate controls, methods, inspection and/or testing equipment are specified.

Requisite skill levels are required per ANSI N45.2.6 or SNT-TC-1A.

After the PQCIs are revised as necessary, Quality Control Engineers (Inspectors) are being trained and must pass an examination and demonstration test to assure their proficiency in utilizing the new instruction. Upon successful completion, each inspector is being certified to perform inspections to those PQCIs in which he was trained.

The adequacy of PQCIs prior to training is assured by the following programmatic requirements:

1. The PQCI evaluation effort is being conducted under the direction of MPQAD QA personnel. MPQAD Procedure E-3M was issued April 11, 1983 and establishes the responsibilities and requirements for the preparation, revision, and control of PQCIs by QA personnel.

   As a part of the initial PQCI revision process, Project Engineering does a review of the PQCI for MPQAD to assist in ensuring that attributes that affect safety have been identified for inspection, and further to ensure that the PQCI is consistent with the specification requirements and that clarifications are made to specifications wherever necessary. The final responsibility for the content of the inspection plan remains with MPQAD-QA.

2. Whenever a PQCI is revised, the revision is evaluated to determine if a pilot run for testing the implementing capability of the PQCI is required. If a pilot run is required, the PQCI is tested by a team from QA, QC and Training. Based on this pilot run, the PQCI may be further revised.

3. Once the PQCI is ready for issue, an effectivity date is established in conjunction with the Training Department.

   A. For PQCIs on which training was not previously conducted, the training and certification process is then started.

   B. For PQCIs on which training and/or certification was previously conducted, a determination is made as to the need for retraining or recertification. When a revised PQCI is issued, it is evaluated in accordance with established procedures to determine if retraining and recertification is required. Based on this evaluation, appropriate action is taken.

4. During the training process, student questions (see below) are solicited and monitored. Based on this, further revision to a PQCI may be initiated.

Steps taken to ensure all questions raised during PQCI training sessions are resolved prior to certification include:

1. The development of an MPQA Department "Statement of Training Policy." A copy of the current Policy is included as Figure 3-2.

2. The Policy Statement is handed out at the start of each class and reviewed with the trainees.

3. Statement 2 of the Policy deals with student questions. Instructors handle many questions as a routine part of a class. However, when an instructor is faced with questions he cannot answer, he makes note of them for subsequent resolution with the students.

4. When the instructor determines the need, a QA Engineer, Project/Resident Engineer or other resource person is scheduled to

participate as part of the class and answer questions raised by the students.

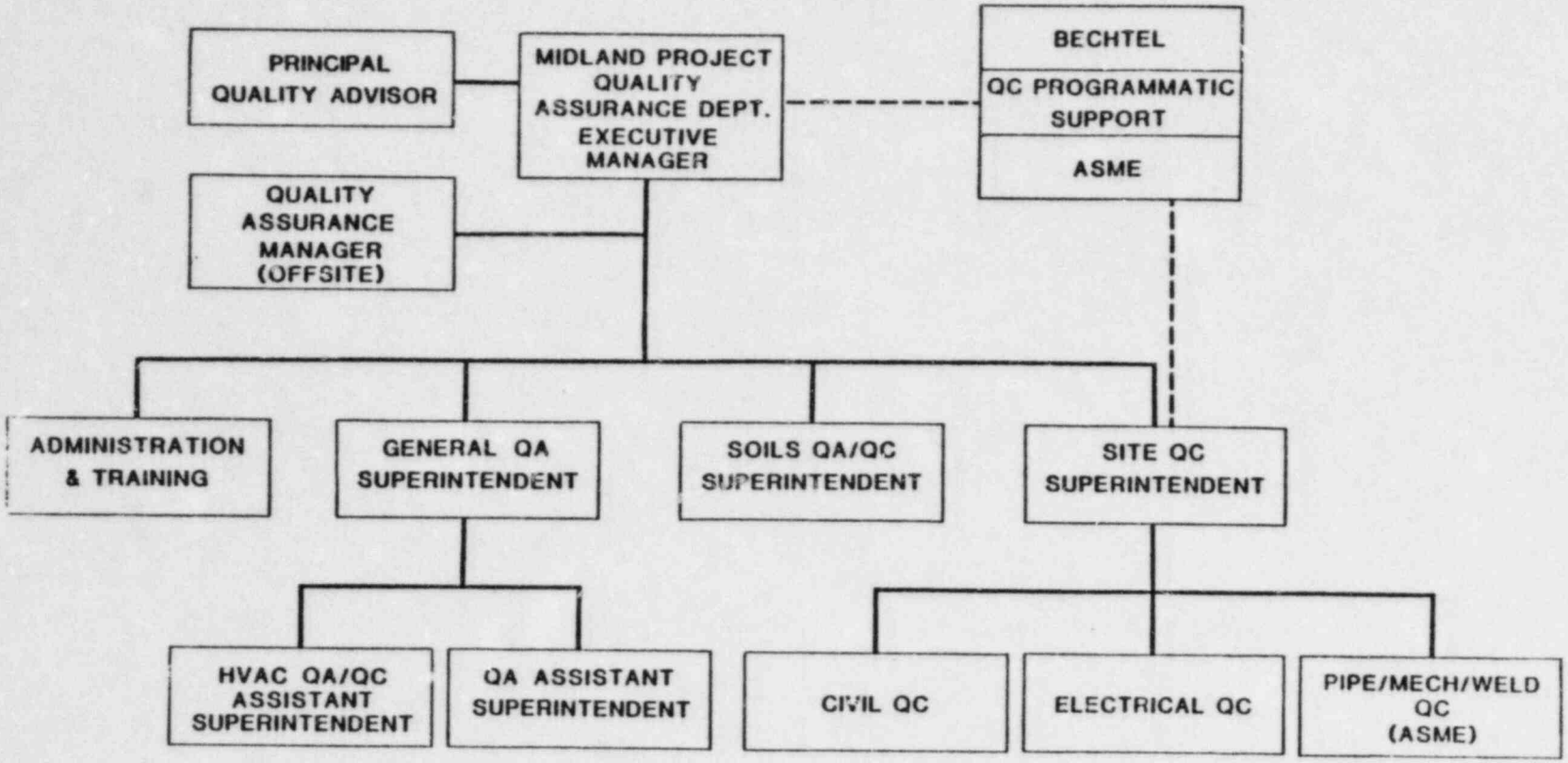
5. If there are unanswered questions at the end of the scheduled class time, an evaluation is made by the instructor as to whether training can nevertheless be considered complete and the examination given without jeopardizing the students opportunity to satisfactorily write the exam.

6. Even if the examination can be given, prior to answering questions, the questions are still tracked and answered prior to certification.

7. When a trainee indicates that he is not prepared to take an examination or a performance demonstration, he shall not be administered the examination or performance demonstration until his specific concerns are resolved.

FIGURE 3-1

MPQAD ORGANIZATION



NOTE: THIS CHART IS INTENDED TO INDICATE ONLY THE INTEGRATION OF THE BECHTEL QC FUNCTION.

MPQA DEPARTMENT STATEMENT OF TRAINING POLICY

FIGURE 3-2

It is the objective of the MPQAD Training Department to provide training that meets the needs of the trainees. To help meet these needs the following policies apply:

1. Personnel who are required to attend classroom training shall not be administered an examination without 100% classroom attendance. 100% attendance is defined as total classroom time less instructor excused absences for brief periods of time. A lesser percentage may be requested in writing by the trainees supervisor and approved by the appropriate Training Supervisor.

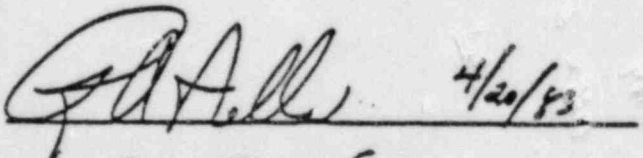
2. When trainees have pertinent questions that relate to the training subject matter the instructor shall take action to answer the questions or obtain the answers and provide them to the students prior to final examination or certification as appropriate.

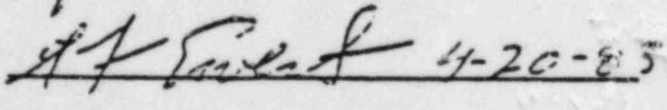
3. The time required for self-study prior to examination shall be determined and scheduled by the appropriate Training Coordinator, based on the duration of the lesson and complexity of the subject.

4. The instructor will review the class evaluation sheets or a composite to determine the acceptability of the training prior to administering the exam to the class. If judged unacceptable, the exam will not be administered until appropriate action has been taken.

5. When a trainee indicates that he is not prepared to take an examination or a performance demonstration he shall not be administered the examination or performance demonstration until his specific concerns are resolved.

STUDENT HANDOUT

RAWells  4/20/83

GFEwert  4-20-83

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Recertify QC Inspectors

The training and recertification process for QC Inspectors as just discussed satisfies commitments made during the September 29, 1982 public meeting with the NRC. Those inspectors transferred from the Engineer/Constructor to MPQAD are trained and examined in accordance with MPQAD Procedure B-3M-1. Upon satisfactory completion of the training and examination requirements, inspection personnel will be certified for the Project Quality Control Instruction(s) (PQCI(s)) they are to implement. Inspection personnel are certified on a schedule which supports ongoing work and system completion team activities.

Where individual inspectors fail to achieve recertification, a determination will be made, based on the cause of the failure, as to whether reinspection of that individuals past work is required.

3.4 Milestones

Establish New Organization

Transfer the Bechtel QC Organization to MPQAD.	Complete
Submit changes to Topical Reports and quality program manuals to NRC.	Complete

Recertify QC Inspectors

Specify the revised training and examination requirements for certification (B-3M-1)	Complete

4.0 PROGRAM PLANNING

4.1 Introduction

The detailed planning for the major portion of the Construction Completion Program is described in this section.

Planning in support of Phase 1 consists of the activities to set up a team organization, process and procedures to assess the installation and inspection status of Q-systems, Q-components and Q-structures (Section 4.2) and to verify the quality status of hardware installed and inspected prior to December 2, 1983, (Section 4.3).

The Phase 2 planning effort covers the process and procedures that will be used by the team organization for completion work (Section 4.4). The procedures to integrate the quality program requirements with completion work are covered (Section 4.5).

4.2 Team Organization (Phase 1)

4.2.1 Introduction

The planning for team organization consists of procedures preparation and team organization and training for an installation and inspection status assessment.

4.2.2 Objectives

1. Establish and implement a team organization ready to inspect and assess work for installation and inspection status.

2. Develop the organizational processes and procedures necessary to implement the team approach for status assessment.

3. Provide training to ensure required inspection and installation status assessment activities are satisfactorily performed.

4.2.3 Description

Team Orgainzation

The team organization structure will vary depending upon the assigned scope of work. The organization will consist of a team supervisor and personnel as appropriate from field engineering, planning, craft supervision, project engineering, MPQAD and Consumers Power Company Site Management Office. The team may be augmented by procurement

personnel, subcontract coordinators and turnover coordinators.

Teams are assigned a specific scope of work and held accountable for status assessment and overall completion within this scope. The scope includes the requirements to develop a viable working schedule and insure early identification and resolution of problem areas. Project processes and procedures are being reviewed and modified to incorporate the team organization. The team MPQAD representative is responsible for providing the QA/QC support for the team. He receives scheduling direction from the Team Supervisor but receives all other direction from and reports to management within MPQAD. To support the team, he analyzes the quality requirements and plans the QC activities to integrate them with the team effort. He assures the necessary PQCI's and certified inspection personnel are available for performing the inspections. He assures validation of NCR's. He maintains cognizance of the quality status of the verification activities.

Pilot teams are being utilized to develop and test processes and procedures during the development stage to assure that Program objectives can be met. This also provides practical field input to assure that efficient and workable methods are used.

Team members are physically located together to the extent practicable to improve communication, status assessment, problem identification and problem resolution. The MPQAD representative, however, will continue to report to MPQAD management and will maintain a permanent physical assignment within the MPQAD area.

Team Training

The construction training procedure (FPG-2.000) has been revised to incorporate the training requirements of the CCP. The procedure sets down specific requirements for type of training and subject matter for each organization element. The training requirements by type and subject are defined in a matrix for each organization, management and staff level including craftpersons. The training matrix will be approved by Consumers Power Company.

The team training includes the major elements described below:

1. General training will be provided in

    A. Quality requirements for nuclear work

B. Requirements of the CCP

C. Safety orientation

D. Inspection and work procedures

Training in Items (1) through (3) and selected parts of (4) will be conducted in a formal setting and will be given to all personnel including the craftpersons.

In addition, a "tool box" training session will be conducted periodically for the craftpersons by the foreman. The subject matter will be developed by the training coordinator, and will include information regarding quality issues across the job.

2. Training in the procedures used to govern the performance of work will be conducted for designated field engineering, support personnel and craft foreman as appropriate.

   Formal training will be conducted for identified procedures that define the control of designated work processes, procedures for control of special processes and requirements for inspection and acceptance of completed work. Formal training includes classroom or field demonstration/discussion sessions.

3. Training in procedures for selected processes will be conducted for the craftpersons. This will consist of discussion and/or field demonstrations for the selected process. A list of the selected processes will be maintained by the Training Coordinator.

Documentation of Nonconformances

Non-conformances on the finished portion of partially completed work identified during the status assessment will be documented on Non-conformance Reports (NCR's).

4.2.4 Milestones

. Complete assignment of team supervisors and members to designated systems.	Complete
. Complete organization description and procedures for team functions.	Complete
. Set up training program for teams.	

4.3 Quality Verification (Phase 1)

4.3.1 Introduction

The verification program is the activity undertaken to establish, using a variety of methods, that the hardware installations completed and inspected prior to December 2, 1982 have an acceptable quality status and that prior inspections were performed in an acceptable manner.

4.3.2 Objectives

The objectives of the verification program are to:

- Develop and implement a verification inspection plan using reviewed/revised PQCI for completed and inspected work which considers:

  a. Re-inspection of accessible items for quality verification.

  b. Verification of acceptability of inaccessible attributes by a review of documentation, over-inspection results and past corrective actions and supplementary to these reviews, if required, by NDE techniques and destructive examination.

4.3.3 Quality Verification Program Description

The Quality Verification Program is provided in Appendix 1 of this document.

The quality verification program is based on a 100% reinspection of accessible attributes and review of documentation for inaccessible attributes. At some future date, once the quality level of completed work has been established, Consumers Power Company will make a determination as to whether or not further verification efforts can appropriately be based on less than a 100% reinspection program.

When Consumers Power Company believes that sufficient justification exists for a reduction in the 100% commitment, it will recommend such a reduction to the NRC in accordance with the statistical sampling plan described in an appendix to the Quality Verification Program.

4.3.4 Milestone

- Issue Quality Verification Plan — Complete

4.4 Completion Planning (Phase 2)

4.4.1 Introduction

Establish completion processes, prepare procedures and expand training to cover completion work.

4.4.2 Objective

The objectives of completion planning are as follows:

- Establish processes and interfaces for work completion.
- Prepare procedures defining tasks of each completion team.
- Train team members by expanding upon training received previously for inspection and status assessment.
- Establish scheduling methods to be used during completion activities.

4.4.3 Description

The team organization (developed in Section 4.2) and the processes and procedures will be extended to accomplish the completion work.

Training will be conducted to assure that supervisors understand the team objectives and their role. Emphasis will be placed on completion of all work in accordance with the design and procedural requirements, and the change process to be used when the design or the procedures must be modified.

4.4.4 Milestone

- Complete team procedures and training program for initiation of completion work.

4.5 QA/QC Completion Planning (Phase 2)

4.5.1 Introduction

The QA/QC completion activity covers the planning to support completion work.

4.5.2 Objectives

Establish in-process inspection program and complete review and modification of PQCIs.

4.5.3 Description

The QC in-process inspection program will be directly coordinated with construction work plans for new work to insure that inspection points are integrated with the installation schedule. The identification of applicable PQCI's and required inspection points will be used by system completion teams to insure that QC inspections are adequately scheduled into the process. The completion team quality representative will be responsible for providing the interface between the completion team and MPQAD to insure that quality requirements are satisfied.

Procedure for Control and Release of New Work

The process for release of work will be controlled by procedures that ensure that the requirements of the Construction Completion Program are met prior to initiation of new work. The requirements for release of work include; checking, review and approval to ensure that verification and status assessment activities are completed and that the new work activity will not cover up (make inaccessible) items that have existing nonconformances. These procedures are identified in Figure 4-1. They define the overall process for identification and approval prior to release of work. These procedures require an identification of equipment or items that may be affected by the new work package and a check to see that there are no existing nonconformances or incomplete inspections on these items.

The interactions between project management, the completion team and the QA/QC organization are as follows. Prior to Phase 1, quantification of Q items will be performed by the completion team. The completed items will be identified to the QA/QC organization for the association of closed IRs and subsequent verification during Phase 1. The remaining items will be placed in an incomplete category and will be the basis for the status assessment by the completion team during Phase 1. A commodity list will be prepared as the Phase 1 verification and status assessment activities are carried out and will result in a documented status for each system/area.

This documented status will form the basis for site management review prior to release for Phase 2 completion work. Construction work plans (CWPs) for new work will be prepared based on the lists as they are developed.

There are several major steps in the preparation and approval of the CWP. Each CWP will have a comparable Quality Work Plan (QWP) that defines the quality activities. Inspection hold points will be identified and included in the CWP. Following initial preparation of the CWP, the package is

taken by the team quality representative. The inspection hold points are reviewed and approved according to MPQAD procedure and a QWP is initiated for this work activity. The QWP contains the inspection records that will be required for that work activity. A review will be performed to ensure existing nonconformances or uninspected work are not covered up. The review will be based on the steps in the three procedures identified in Figure 4-1. After the CWP is returned to construction, and the QWP is prepared, work can proceed.

4.5.4 Milestone

- Complete procedures for integration of inspection points with construction work process.

- Complete procedures for control and release of new work.

FIGURE 4-1

Procedures for Controlling Release for New Work

Procedure	Organization	Purpose
Area Release for Construction (FIG 7.500)	Construction	These three procedures together ensure proper completion of verification and status assessment activities prior to initiation of new work and ensure no cover-up of existing nonconformances
Construction Work Plans (FPG 7.300)	Construction	
Control, Release and Handling of Construction Work Plans and Quality Work Packages (T-3)	MPQAD	

5.0 PROGRAM IMPLEMENTATION

5.1 Introduction

The implementation of the Phase 1 Construction Completion Program activities will be initiated after management reviews of the overall process insures that Project performance and quality objectives have been addressed. The Phase 1 work will then be carried out by the various teams and inspection personnel in accordance with the procedures described in the preceding sections. The verification and installation and inspection status assessment of an area, system or partial system will be followed by a review of results and a second management review before initiating the Phase 2 completion work.

5.2 Objectives

The objectives to be met are:

- Establish the present installation completion and quality status.
- Integrate the construction and quality activities for all remaining work.
- Improve performance in demonstrated conformance to quality goals in all system completion work.
- Establish a management involvement that ensures program committments are properly defined and carried out.

5.3 Description

Management Reviews

Project management will conduct formal review of the plans for implementation activities prior to initiation of team activities for the Phase 1 work. These reviews will ensure that identified project management and quality issues have been adequately addressed by specific actions and that Program objectives are met. The reviews will cover the process for both 1) the verification of completed inspection activity and 2) the installation and inspection status activity.

The installation and inspection status assessment will be performed on a system and/or area basis. Phase 2 is initiated after a formal Project management review of the first status assessment results to evaluate implementation effectiveness. After completion of this review, a work segment will be released for completion.

The Phase 1 management review and the initial Phase 2 management review will be audited by the Construction Implementation Overview Third Party as described in Section 7.3.

Management Release

Subsequent status assessment results will be released by site management prior to initiation of additional completion segments. Reports will be made to Project management at regularly scheduled meetings.

Phase 1 Implementation

The existing installation and inspection status and verification of completed work will be established in accordance with the plan presented in Section 4.

Phase 2 Implementation

This activity starts completion for turnover. Work will be scheduled as installation and inspection status assessments are completed and reviewed. Correction of identified problems will be given priority over initiation of new work, as appropriate, and the completion teams will schedule their work based on these priorities.

The plant will be divided into many distinct modules and the CCP sequence will be applied to each module. As a result, there will be situations in the plant where Phase 2 activities will be occurring immediately adjacent to an area undergoing Phase 1 activities.

5.4 Milestones

- Complete Management review and initiate implementation of plan for verification of completed inspections.
- Complete Management review and initiate implementation of plan for status assessment.
- Complete Management review of initial verification and installation and inspection status results and initiate systems completion work.

6.0 QUALITY PROGRAM REVIEW

6.1 Introduction

The adequacy and completeness of the quality program is reviewed as part of the ongoing Project management attention to quality. These reviews consider questions raised by NRC inspections or findings raised by third party evaluations.

6.2 Objective

Address issues raised by internal audits, NRC inspections and third party assessments. Program changes, if needed, will be evaluated and, as findings are processed, will be factored into the Project work.

6.3 Description

Consumers Power Company believes Midland QA program is sound. From time to time, questions arise on detailed aspects of the program or program implementation. The normal process of addressing these issues ensures that all necessary information is provided to NRC and that internal confidence in the program is maintained.

The recent inspection of the diesel generator building has raised several issues of programmatic concern. These are in the areas of material traceability, design control process, Q-system related requirements, document control and receipt inspection. Project management has directed that an expeditious evaluation of these issues to be considered as part of the management review prior to initiation of Phase 2. Items identified in the NRC D/G Bldg inspection report are addressed and being resolved through the normal process of closing the inspection findings. Any corrective action or program changes will be implemented as appropriate in Project work on a schedule provided in the inspection report response.

The Project will also receive, from time to time, findings from third party assessments (Section 7). These findings or recommendations may also result in program modification or adjustments. Corrective action taken by the Project will be implemented on a schedule stated in the response to these findings.

7.0 THIRD PARTY REVIEWS

7.1 Introduction

This section describes third party evaluations and reviews that have been performed and are planned to assess the effectiveness of design and construction activity implementation. Third party reviews being conducted as part of the Remedial Soils Program are not included in this activity.

7.2 Objectives

To assist in improving Project implementation and assessment of Midland design and construction adequacy, consultants will be utilized in order to:

- Achieve a broad snapshot of current Project practices and performance in relation to a national program.
- Provide continuous monitoring and feedback to Management of Project performance.
- Identify any activities or organizational elements needing improvement.
- Improve confidence (including the NRC's and the public's) in overall Project adequacy.

7.3 Description

The use of consultants to overview Project design and construction activities with particular emphasis on construction is part of the effort to improve the Project's implementation of the quality program. Specifically, the plan overview employs the use of consultants for three separate functions: (1) To carry out a self-initiated evaluation (SIE) of the entire Project under the INPO Phase I program, (2) to utilize a third party overview of ongoing site construction activities to provide monitoring of the degree of implementation success achieved under the new program and (3) to conduct a third party Independent Design Verification (IDV) Program.

1. The INPO self-initiated evaluation was planned as part of an industry commitment to the NRC in response to concerns over nuclear plant construction quality assurance. For the Midland SIE, the evaluation was contracted to be carried out entirely by third party, experienced personnel from the Management Analysis Company.

   The evaluation was performed by a team of 12 consultants familiar with the INPO criteria and evaluation methodology. Over a period of a month they interviewed Project personnel at various locations and observed work in progress. The initial

results of their evaluation have been presented to the Company and a Project response to each finding have been prepared and included as part of the evaluation report to be submitted first to INPO and then to the NRC Region III Administrator, together with the INPO overview.

2. A third-party Construction Implementation Overview (CIO)is being undertaken using, as a model, the program developed specifically for the underpinning portion of the soils remedial work. The overview was initiated by retaining an independent firm, having considerable experience and depth of personnel in the nuclear construction field. The consultant's overview team is located at the Midland Plant site and observe the work activities being conducted in accordance with this Plan. The overview will continue until Consumers Power and the NRC have confidence in the adequacy of the implementation of the Consumers Quality Assurance Program for the Midland Project. Findings identified by the installation overview team will be made available to the NRC in accordance with established procedures. The protocol for communications between the parties will be the same as used on the soils remedial activities.

   In order to ensure the Project's readiness to undertake the major steps in the Construction Completion Program (CCP), the CCP includes provisions for management review at key points in the process. The review will examine plans for future implementation and ensure that programs and processes are thorough, complete and correct. To provide the NRC with additional assurance that the CCP processes have, in fact, been and will be implemented as described, the duties of the third party CIO will include responsibility for audits of Project performance of these management reviews of the CCP process. The CCP implementation will not proceed beyond these points until the third party overviewer has documented their satisfaction with our readiness to proceed, including satisfaction with our initial response to any audit findings, in their weekly reports or other memoranda.

The CIO will also overview site construction activities while in residence, although the significant focus will be on the implementation of the CCP. The exception is that the CIO will not include an overview of the other third party evaluations being conducted.

Consumers Power Company has proposed that Stone and Webster (S&W) be the organization to perform the CIO. This is based on the fact that S&W is considered technically capable to perform the activities both in terms of the individual team proposed and in the corporate depth to support this effort. They are presently conducting an independent overview of the soils remedial activities and have been found acceptable by the NRC for corporate independence.

3. An Independent Design Verification (IDV) is being conducted by Tera Corporation.

   The IDV is directed at verifying the quality of design and construction for the Midland Plant. The approach selected is a review and evaluation of a detailed "vertical slice" of the Project design and construction. The design and as-built configuration of three selected safety systems will be reviewed to assure their adequacy to function in accordance with their safety design bases and to assure applicable licensing commitments have been properly implemented. The field work done in support of this activity will not take place until after Phase I implementation (Section 5) has been completed on the systems being reviewed.

   The Unit 2 Auxiliary Feedwater System (AFW), The Control Room Habitability System and the Emergency Power Supply, will be reviewed to fulfill the requirements of the IDV.

7.4 Milestones

1. INPO Construction Project Evaluation

Select consultant and conduct evaluation	Complete
Submit report to INPO	Complete

2. Independent Construction Overview

Define scope	Complete
Select consultant	Complete
Mobilize CIO Team	Complete

3. IDV

Select Systems	Complete
Complete Evaluation	

8.0 SYSTEM LAYUP

8.1 Introduction

Perform system lay-up activities to protect plant equipment.

8.2 Objectives

Expand the protection of completed and partially completed plant systems and components until plant start-up, to take into account any special considerations during the status assessment.

8.3 Description

Procedures and instructions are provided in the Testing Program Manual to protect equipment during the on-going installation and test work. These were extended to cover special considerations associated with the Program implementation. Both the pre- and post-turnover periods are covered. System and component integrity is ensured through existing programs and implementation of control and verification procedures.

In summary, these procedures and instructions require: Test Engineers to complete walkdowns of Q-Systems (in the auxiliary, diesel generator and containment buildings and the service water pump structure), paying particular attention to systems/components that are open to the atmosphere (eg open ended pipes, open tanks, missing spools, disconnected instrument lines, etc). Systems that have been hydrotested but are not currently in controlled layup require action to place the system in layup. Layup will vary from system to system but in general will consist of air blowing to remove moisture and closing the system from the atmosphere.

8.4 Milestones

. Complete the layup preparation walkdown — Complete

9.0 CONTINUING WORK ACTIVITIES

9.1 Introduction

This section describes the activities that are proceeding in accordance with previously established commitments during the implementation of the Program.

9.2 Objectives

- Maintain installation and support effort that will alleviate work interference in congested portions of the plant and facilitate completion and protection of equipment on systems turned over to Consumers Power Company.

- Meet previous NRC commitments on activities which do not impede the execution of the Program.

- Provide design support for orderly system completion work and resolution of identified issues

- Establish a management control to initiate additional specified work that can proceed outside of the CCP completion activities

9.3 Description

Those activities that have demonstrated effectiveness in the Quality Program implementation will continue during implementation of the Construction Program.

These are:

1. NSSS Installation of systems and components being carried out by B&W Construction Company.

2. HVAC Installation work being performed by Zack Company. Welding activities currently on hold will be resumed as the identified problems are resolved.

3. Post system turnover work, which is under the direct control of Consumers Power Company, will be released as appropriate using established work authorization procedures.

4. Hanger and cable re-inspections which will proceed according to separately established commitments to NRC.

5. Remedial Soils work which is proceeding as authorized by NRC.

6. Design engineering which will continue for the Midland Plant as will engineering support of other project activites.

Other programs that are not a part of the Construction Completion Program (CCP) will be integrated with the CCP effort as required for

overall project coordination and control by Midland Project Site Management Office.

A separate organization of design engineers (presently existing) will carry out spatial systems interaction (SSI) review and examination. Although not part of the CCP, this will be done in coordination with the activities of the CCP. The conduct of the SSI is not a prerequisite to either Phase 1 or Phase 2 of the Construction Completion Program. This program is being overviewed by the CIO as described in Section 7.3. The SSI represents the Project response to the generic licensing issue of "important to safety" and is being handled outside of the CCP with NRC NRR.

Additional activities related to the completion effort, may be initiated, as appropriate, to support orderly completion of the overall Project. Any activities in this category that are initiated prior to release of an area, system or partial system for completion work will be reviewed with the NRC Region III before initiation.

9.4 Milestones

These activities are proceeding with schedules that are independent of this Plan.

10.0 CHANGES TO THE CONSTRUCTION COMPLETION PROGRAM

10.1 Introduction

The mechanism for obtaining approval to initiate activities that do not meet the requirements of the CCP is described in this section.

10.2 Objectives

Establish a management control to ensure that any activities that do not meet the requirements of the CCP are reviewed and approved prior to initiation.

10.3 Description

A procedure (MPPM-19) is being issued to control changes to the CCP. The procedure will provide that Q work activity outside the exceptions defined in Section 9.0 will meet the requirements of the CCP. Any changes to the defined CCP process will receive management review and approval for any deviation from the CCP requirements. The requirements that must be maintained for work activities under the CCP are:

A. Management reviews are scheduled and held of (1) activity planning for verification and status assessment and (2) results of status assessment and planning prior to new work activity.

B. A process is in place to ensure that no existing nonconformances will be covered up by new work activities.

C. Procedures to control work definition and release including definition of inspection requirements and hold points are in place.

D. Inspection and construction personnel involved must have received all required training.

Any work activity that does not meet these conditions will be considered a change. A change will be reviewed by the Construction Implementation Overviewer. The NRC Region III management will be informed prior to implementation.

QUALITY VERIFICATION PROGRAM
MIDLAND NUCLEAR COGENERATION PLANT UNITS 1 AND 2

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QUALITY VERIFICATION PROGRAM
MIDLAND NUCLEAR COGENERATION PLANT UNITS 1 AND 2

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QUALITY VERIFICATION PROGRAM

Midland Nuclear Cogeneration Plant Units 1 and 2

1. Purpose: To confirm through a verification program under the direction of Consumers Power Company, the acceptable quality status of safety related procurement and construction activities completed and inspected by the Engineer-Constructor quality control personnel prior to December 2, 1982.

2. Scope: This program will cover all closed Inspection Records of inspections performed by the Engineer-Constructor quality control personnel on safety related material, systems, components and structures of the Midland Nuclear Cogeneration Plant Units 1 and 2 prior to December 2, 1982, except:

   2.1 Remedial Soils Work, which has been under the direction of Consumers Power Company Quality Assurance (QA) personnel since August, 1982.

   2.2 HVAC work, which has been under the direction of Consumers Power Company QA personnel since the major reorganization in June 1981.

   2.3 Verification of cable routing, identification and other accessible attributes which is being done on a 100% reinspection basis in accordance with PQCI E-4.0.

   2.4 Verification of ASME hangers which will be done under a separate reinspection program as previously committed to the NRC on November 15, 1982 and March 29, 1983. This program requires 100% reinspec-

tion of all hangers with closed IR's as of December 1982. This program will be conducted under the direction of Consumers Power Company QA personnel.

2.5 B&W Construction Company activities which have been performed under the B&W Quality Assurance Program.

3. References:

3.1 Regulatory Guide 1.58, Rev 1, Qualification of Nuclear Power Inspection, Examination and Testing Personnel.

3.2 MPQAD Procedure E-3M, Preparation and Approval of Project Quality Control Instructions

4. Definitions:

Population:	The entire quantity of closed Inspection Records (IR) as of December 2, 1982 relating to a specific PQCI.
Project Quality Control Instruction (PQCI):	The document that provides Quality Control Engineers (QCEs) with specific direction as to attributes to be verified, how they are to be verified and the acceptance criteria.

Inaccessible: An item or attribute of an item which, due to its physical location or configuration, cannot be physically or visually reinspected without removing and thereby invalidating installed work. Under the Quality Verification Program, this includes those items or attributes normally inspected in process and which subsequent construction processing makes inaccessible, eg, piping fit-up, root weld and subsequent layers under the cover pass, anchor bolt hole drilling, internal cleanliness, embedment in concrete, etc. Inaccessible does not include those items which can reasonably be reached by scaffold erection, limited access (remote) areas which require the physical size of the inspection personnel to be limited or those items that can be viewed by removal of access cover or panels, eg, electrical consoles, cabinets, conduit boxes, etc.

The inaccessibility of attributes covered by insulation or coatings will be

handled on a case by case basis. When such coverings can be practically removed and replaced and where their particular reinspection is required to establish an acceptable level of confidence of the quality of a particular attribute, the coverings will be removed. Items which fall into this category and are scheduled for verification in accordance with plan requirements will not be considered inaccessible unless so approved on a case by case basis by the Executive Manager - MPQAD.

Inspection Record (IR): A report that scopes the inspection to be performed, relating it to a specific PQCI and a system, component, structure or portion thereof and which records the results of inspections.

In Process Inspection Notice (IPIN): A form previously used to record nonconforming conditions on work returned to construction forces for rework prior to completion of inspection activities for the unit in question.

Discrepancy Report (DR):	A form similar to the IPIN and used to report inprocess nonconformances.
Nonconformance Report (NCR):	A document used for reporting nonconforming conditions.
Reinspection:	As used in this Verification Program, reinspection means a complete review of requisite documentation and a physical or visual recheck of accessible inspection attributes covered by a specific PQCI or a review of applicable inspection records and related quality documentation where attributes are not accessible.
Inspection by Attributes:	Inspection whereby the characteristic or item or attribute is classified simply as conforming or nonconforming without regard for the degree of nonconformance.
Nonconformance:	A deficiency in characteristic, documentation or procedure which renders the quality of an item unacceptable or indeterminate.

Verification: As used in this program, verification refers to the overall process of establishing the quality acceptance of the total population of completed and inspected work through combinations, as applicable, of efforts such as re-inspection documentation review, review of past efforts to investigate and resolve problems, analysis of past overinspection results and, if necessary, NDE techniques and destructive examination.

5. Program Content: As identified in Section 2, Scope, Consumers Power Company (CPCo) will conduct a Quality Verification Program of safety related procurement and construction work in which the prior 100% inspections have been performed under the direct supervision of the Engineer-Constructor. Such inspections were performed in accordance with approximately 100 PQCIs, as listed in Appendix A, that specified the inspection requirements to be achieved by Quality Control (QC) Personnel. As noted in section 5.1, this listing includes all inspections completed by the Engineer-Constructor prior to December 2, 1982, including those excluded from this program for reasons stated herein. The Quality Verification Program has the purpose of establishing a quality baseline for the completion of construction of the Midland Project.

5.1 Detailed Scope: The program will include approximately 100,930 IRs subject to the Quality Verification Program, for which the Engineer-Constructor has a record of completed inspections as documented by closed Inspection Records (IR) and for which no other 100% verification activity has taken place or is scheduled to take place. There are approximately 147,300 closed IRs of which approximately 14,700 were for reinspections which occurred due to design change, construction rework, etc., and approximately 31,890 which are excluded, due to previous commitments under the Remedial Soil, HVAC, Cable routing and identification and ASME Hanger Programs. Where a reinspection has occurred on a specific item or attribute the verification will relate to the latest IR. In addition, prior to the use of PQCIs, Material Receipt Inspections (MRI), Field Inspection Plans (FIP) and Welding Inspection WR-5 forms were used as quality instructions and records. These also will be used for quality verification. Where applicable, the results of the inspections will be grouped with like PQCIs. Otherwise they will be treated as separate populations.

5.2 Methodology: This program will provide assurance of the quality of completed work and establish the validity of prior inspections. To accomplish this, accessible attributes of items covered by completed IRs will be reinspected to the latest design requirements with PQCI's which have been reviewed and revised to assure clarity of acceptance criteria and uniformity of implementation. For

inaccessible attributes, the original inspection documents will be reviewed for evidence of acceptability, and justification will be developed as described in section 6.5 to establish hardware quality and support the validity of inspections associated with such PQCIs. Each IR relates to a specific PQCI. PQCIs are organized by discipline and further structured to activities within that discipline, e.g., there are separate PQCIs and corresponding IRs for pre-placement, placement and post-placement inspections of concrete. Closed IRs related to each PQCI provide a population of like activities. Closed IRs are those where the Engineer-Constructors 100% inspection of construction and installed hardware has been completed.

To assess the validity of these past completed inspections, and verify the hardware quality, CPCo will initiate a 100% reinspection of the population to provide adequate confidence that safety related systems components and structures will perform satisfactorily in service.

The initial 100% reinspection effort will be based on a systems/area orientation to provide a quality baseline for subsequent construction completion activities. System/area reinspections will be supplemented by random plant-wide inspections as appropriate to establish a valid quality baseline on an expeditious basis.

At some future date, once the quality level of completed work has been established, CPCo will make a determination as to whether or not further verification efforts can appropriately be based on less than a 100% reinspection program.

When CPCo believes that sufficient justification exists for a reduction in the 100% commitment, it will recommend such a reduction to the NRC in accordance with the statistical sampling plan attached as Appendix C.

5.3 Identification of Deficiencies: Any nonconforming condition observed during the implementation of this program other than those previously identified on nonconformance reports, will be identified by a nonconformance report and will be dispositioned in accordance with established procedures.

5.3.1 Deficiencies Found During Reinspection of Accessible Attributes: Reinspections will be conducted in accordance with PQCIs which have been reviewed or revised since implementation of the Construction Completion Program (CCP) and in accordance with current design drawings and specifications. An acceptable reinspection will validate both the hardware quality and the prior IR. Any deficiencies, other than those previously identified on nonconformance reports as a result of prior inspections, will be identified on a

nonconformance report which will be traceable to both the verification and original IR and the item or attribute in question. When a nonconformance documents a difference between the as built condition of the unit and the referenced design drawing or specification, a further check will be made to determine the design basis against which the IR was originally completed, as well as the current stage of construction, to further establish the validity of the original IR.

5.3.2 Deficiencies Found During Reinspection of Documentation for Inaccessible Attributes: The verification process for inaccessible attributes is discussed in Section 6.5. As noted in that section, any documentation deficiencies will be recorded on the new IR, entered on a nonconformance report and cross referenced to the original IR.

6. Special Program Elements

6.1 Cable Reinspection: As noted in Section 2, Scope, reinspection of routing and identification of installed cables is underway and is being performed 100% for all accessible attributes per PQCI E-4.0. Other electrical work, including cable tensioning and terminations, on which inspections have been completed by the the Engineer-Constructor will be handled in accordance with this program. This

includes PQCIs E-1.0, E-1.1, E-1.60, E-2.0, E-2.1, E-3.1, E-5.0, E-6.0, E-6.2, E-6.6 and E-6.6.1. These PQCIs are further defined and affected quantities of IRs are shown in Appendix A.

6.2 IPIN and DR: In accordance with approved procedures the QC inspection process has used in the past In Process Inspection Notices (IPIN) and Discrepancy Reports (DR) rather than Nonconformance Reports (NCR) to record nonconforming conditions noted by the inspector on work returned to construction for rework. The process required that IPINs be dispositioned before the Inspection Record could be closed. Because the use of IPINs and DRs raises the possibility that a complete inspection may not have been performed on items or attributes covered by IRs with associated IPINs or DRs, all such IRs will be treated as a unique population and will be reinspected 100%. IPINs are no longer used in the inspection process. Discrepancy Reports (DR) were used prior to the use of the IPINs. They are no longer in use, but are recorded and will be treated the same as the IPIN.

6.3 Exceptions to this Program: Exceptions to this Program shall not be taken unless such exceptions can be fully justified. One such example would be a case where objective evidence is available of a CPCo overinspection of the the Engineer-Constructor's inspections and which demonstrates effective quality control and provides the basis to verify acceptability of the items or attributes covered by these past IRs.

Where such exceptions are proposed to be taken, a special report will be prepared by the MPQAD-QA General Superintendent for review and approval of the Executive Manager-MPQAD. This report will contain full justification for the exception and documentation of objective evidence to support the exception. The Executive Manager-MPQAD will inform the NRC Region III whenever he has made a decision to allow such an exception to the Program prior to implementing the exception.

6.4 Purchased Material: Purchased safety related material and components whether source inspected or inspected upon receipt are subject to this Program for verification of completed receipt inspections performed by the Engineer Construction prior to December 2, 1982. In many cases, purchased items have been installed and are not fully accessible for reinspection; however inaccessible interfaces will have been demonstrated and their functional acceptability proven through installation and subsequent testing. Accessible features will be reinspected in accordance with this Program. The total number of IRs associated with PQCI R-1.00, Material Receiving Inspection, is approximately 12,000. In addition, prior to the introduction of PQCI R-1.00, approximately 150 MRIs and 20 FIPs were used for receipt inspection, covering approximately 700 items. Based upon further review, receipt inspections covered by MRIs will either be grouped with like items covered by PQCI R-1.00 or be reinspected separately. FIPs were also used for construction

activities and will be treated separately under this plan. Where materials such as rebar, certain structural members or features of components are inaccessible for reinspection, documentation will be reviewed in accordance with this Program.

6.5 Inaccessible Attributes: There are 57 PQCIs which cover activities that appear to be inaccessible for reinspection. These include rebar installed in placed concrete, containment building tendon reinspection, and PQCIs relating to surveillance of subcontractor actions. A complete listing of these is given in Appendix B to this Program. A brief statement as to why attributes of these IRs are considered inaccessible and why verification by documentation review is appropriate appears in Appendix B. Documentation relating to these PQCIs will be reviewed as indicated in this Program, in accordance with a revised PQCI or checklist specifically developed for review of documentation. These PQCIs, either individually or by groups, will be reviewed and specific detailed justification will be developed to verify the quality status of associated hardware. This will be done by a combination of methods, applied as necessary to achieve verification, including validation of prior inspections through documentation review, reinspections of attributes that may still be accessible, a review of past overinspections, a review of past activities to resolve problems, and if required, application of NDE techniques or limited destructive examinations. This justification, or recommendations

for additional verification activities, where this justification cannot be established, will be provided by the MPQAD-QA General Superintendent to the Executive Manager-MPQAD for decision and approval. Deficiencies in documentation will be reported on nonconformance reports, the disposition of which will determine further actions necessary. These actions will include special testing programs as required to satisfactorily establish the quality acceptance of this category of PQCIs.

7. Documentation and Reports:

7.1 Documentation of Results: Results of reinspections and document reviews will be recorded on new IRs opened specifically for this purpose. Each such new IR will be cross-reference to the closed original IR. A proper notation will be made on the new IR to identify whether the existing original inspection covered by the IR was validated, rejected or is indeterminate. The new IR will provide the basis to document the quality status of the items or attributes being reinspected.

7.2 Documentation of Nonconformances: Nonconforming conditions observed during reinspection activities will be documented on a nonconformance report and appropriately analyzed for management attention. This includes instances where a design or construction modification has occurred since the Inspection Record was closed and a new IR not yet opened. (Note discussion in Section 5.3.1)

7.2.1 Trending: Deficiencies noted during the verification process will be trended as appropriate for analysis and management information.

7.3 Reports:

7.3.1 Reports to Executive Manager-MPQAD: A weekly status report will be made jointly by the CPCo BOP Quality Control (QC) Superintendent and Quality Assurance (QA) General Superintendent to the Executive Manager - Midland Project Quality Assurance Department (MPQAD) summarizing the results of the program. The report will note the completed Inspection Reports by the unique PQCI number, Nonconformance Reports issued and identification of attribute(s) causing the nonconformance(s).

7.3.2 Reports from Executive Manager-MPQAD: The Executive Manager-MPQAD will inform the CPCo Site Manager, the Engineer-Constructor Project Manager, and the Vice President, Projects, Engineering and Construction, of the status of the quality verification program on a biweekly basis and will provide them with a formal monthly report of the verification effort. As appropriate, he will also report on the acceptability of completed work as it may be impacted by nonconformances.

7.3.3 Reports to NRC and Construction Implementation Overview Team: The Executive Manager-MPQAD will provide copies of the monthly reports noted in section 7.3.2 to NRC Region III and the Construction Implementation Overview Team.

8. Implementation: This program will be implemented under the direct control of MPQAD through procedures approved and issued according to normal programmatic requirements.

8.1 Organizational Responsibilities: The Executive Manager-MPQAD has total overall responsibility and authority for the development and implementation of all quality related aspects of this verification program. He will be responsible for seeing that the implementation phase of the program is coordinated with other project departments as required to assure proper support for this plan commensurate with overall project goals.

8.1.1 MPQAD - BOP QA: is responsible for the programmatic elements of the verification program including, but not limited to, procedure development, PQCI review and approval, nonconformance review, analysis of results, justification for document review, verification of inaccessible attributes, program content modifications and certifying that the verification has been completed for a given area or system, and performing management overview of the reinspection process with appropriate documentation of results.

8.1.2 MPQAD - BOP QC: is responsible for program implementation including, but not limited to, conducting the reinspection activities with QC personnel that satisfy Regulatory Guide 1.58, Rev 1, which requirec personnel certification in accordance with ANSI N45.2.6 (no person will reinspect activities for which he performed the original inspection), reporting results to the Executive Manager-MPQAD, reporting nonconformances to MPQAD-BOP QA, and coordinating with Construction Services and Consumers Site Management Office to establish schedule priorities for reinspection activities.

8.1.3 MPQAD - Site Audit Section: is responsible for formal audits of the overall verification program implementation.

8.1.4 MPQAD - QA Administration and Training: MPQAD Procedures will be developed in accordance with programmatic requirements to direct implementation of this plan.

A LIST OF ALL PQCI'S WITH QUANTITY AND REINSPECTION INFORMATION

PQCI #	PQCI TITLE	QUANTITY	DOC'T	HARDWARE	REMARKS
C-1.02	Compacted Backfill	181			Hardware & documentation under remedial soils program
C-1.09	Inspection of Crack for BWST Foundation Ring Wall	5			Hardware & documentation under remedial soils program
C-1.10	Insp of Grouting and Dry Packing	1833	±	±	Surface condition and documentation
C-1.11	Drilling & Grouting Rebar	66	±	x	
C-1.20	Concrete Preplacement Inspection	767	±	±	Inspection of remaining unplaced concrete areas plus past documentation
C-1.21	Inspection of Reinforcing Steel	259	±	±	Inspection of accessible rebar plus past documentation
C-1.22	Inspection of Reinforcing Steel at Construction Joints	19	±	±	Inspection of accessible rebar at remaining joints plus past documentation

KEY:
± Document-Review documentation for completeness
± Hardware-Reinspect accessible attributes
x Hardware-Attributes not acessible for reinspection

A LIST OF ALL PQCI'S WITH QUANTITY AND REINSPECTION INFORMATION

PQCI #	PQCI TITLE	QUANTITY	DOC'T	HARDWARE	REMARKS
C-1.30	Concrete Placement Inspection	780	±	x	
C-1.31	Inspection of Concrete Activities	246	±	x	
C-1.40	Concrete Post Placement Inspection	100?	±	±	Inspection of concrete surfaces plus documentation
C-1.50	Installation and Testing of Expansion Anchors	4982	±	±	Inspection for proper installed condition
C-1.51	Retest Verification of Drop In Expansion Anchors	54	±	x	
C-1.52	Reinspection of Seismic Category I Pipe Support Expansion Anchors	294	±	x	
C-1.53	Reinspection of Expansion Anchors for Seismic Cat I Support	0			

KEY:
± Document-Review documentation for completeness
± Hardware-Reinspect accessible attributes
x Hardware-Attributes not acessible for reinspection

A LIST OF ALL PQCI'S WITH QUANTITY AND REINSPECTION INFORMATION

PQCI #	PQCI TITLE	QUANTITY	DOC'T	HARDWARE	REMARKS
C-1.56	Reinspection of Rock Bolt Installation	20	±	x	
C-1.60	Concrete Drilling and Cutting Reinforcing Steel	325	±	x	
C-1.70	Installation of Pressured Concrete Pipe	2	±	x	
C-1.80	Installation of Concrete Unit Masonry	102	±	x	
C-1.81	Installation of Concrete Unit Masonry	139	±	x	
C-1.90	Installation of SWI Sluice Gates	0			
C-2.00	Plant Area Dewatering	59			Hardware and documentation under remedial soils program

KEY:
± Document-Review documentation for completeness
± Hardware-Reinspect accessible attributes
x Hardware-Attributes not acessible for reinspection

A LIST OF ALL PQCI'S WITH QUANTITY AND REINSPECTION INFORMATION

PQCI #	PQCI TITLE	QUANTITY	DOC'T	HARDWARE	REMARKS
C-2.02	Permanent Gravel Packed Wells	17			Hardware and documentation under remedial soils program
C-2.03	Drawdown Recharge Test	1			One time test under remedial soils program
C-2.05	Drilling Q-Listed Areas for Underpinning Operations	14			Remedial Soils Program
C-2.10	Structural Steel Erection	121	±	±	Inspection of accessible attributes plus documentation
C-2.11	Installation of Watertight and Airtight Doors	0			
C-2.20	Field Fabrication of Miscellaneous Steel	1502	±	x	
C-2.21	Field and Offsite Fabrication of Reinforcing Steel	0			

KEY:
± Document-Review documentation for completeness
± Hardware-Reinspect accessible attributes
x Hardware-Attributes not acessible for reinspection

A LIST OF ALL PQCI'S WITH QUANTITY AND REINSPECTION INFORMATION

PQCI #	PQCI TITLE	QUANTITY	DOC'T	HARDWARE	REMARKS
C-2.56	Load Monitoring of the Feedwater/Isolation Valve Pit Rod & Rock Bolt	0			Remedial Soils Program
C-3.01	Installation Inspection of Spent Fuel Storage Racks	20	±	±	Inspection of accessible attributes plus documentation
C-3.02	Installation Inspection of Spent Fuel Storage Racks	8	±	±	Inspection of accessible attributes plus documentation
C-3.03	Inspection of Test for Acceptability of the Spent Fuel Rack Cells	0			
C-4.10	Batch Plant Inspection	929	±	x	
C-5.10	Shear Connector Installation	503	±	x	
C-6.00	Mechanical Splicing of Reinforcing Bars	787	±	x	

KEY:
± Document-Review documentation for completeness
± Hardware-Reinspect accessible attributes
x Hardware-Attributes not acessible for reinspection

A LIST OF ALL PQCI'S WITH QUANTITY AND REINSPECTION INFORMATION

PQCI #	PQCI TITLE	QUANTITY	DOC'T	HARDWARE	REMARKS
C-7.00	Erection of Reactor Building Liner Plate	10	±	x	
C-8.50	Inspection of Surface Preparation Application Touch Up & Repair of Coating	908	±	x	
C-8.51	Inspection of Decontamination Coat for Concrete	17	±	±	Inspection of surface condition plus documentation
C-8.60	Inspection of Surface Preparation Application Touchup & Repair of Coatings Reactor Bldg Liner Plate	0			
C-9.00	Installation-Post Tensioning Components	40	±	x	
C-9.10	Post Tensioning System Stressing	309	±	x	

KEY:
± Document-Review documentation for completeness
± Hardware-Reinspect accessible attributes
x Hardware-Attributes not acessible for reinspection

A LIST OF ALL PQCI'S WITH QUANTITY AND REINSPECTION INFORMATION

PQCI #	PQCI TITLE	QUANTITY	DOC'T	HARDWARE	REMARKS
C-9.20	Containment Bldg Tension Reinsp	11	±	x	
CW-1.00	Welding & NDE of "Q" Listed Non ASME Items	381	±	±	Inspection of surface condition and radiographs plus documentation
E-1.0	Installation of Conduit Boxes and Supports	4716	±	±	Inspection of accessible attributes plus documentation
E-1.1	Installation of Boxes	9	±	±	Inspection of accessible attributes plus documentation
E-1.60	In Process Inspection of Electrical Item Installation	85	±	x	
E-2.0	Installation of Cable Tray and Wireway	1368	±	±	Inspection of accessible attributes plus documentation
E-2.1	Installation of Tray Supports	799	±	±	Inspection of accessible attributes plus documentation

KEY:
± Document-Review documentation for completeness
± Hardware-Reinspect accessible attributes

A LIST OF ALL PQCI'S WITH QUANTITY AND REINSPECTION INFORMATION

PQCI #	PQCI TITLE	QUANTITY	DOC'T	HARDWARE	REMARKS
E-3.0	Final Electrical Area Completion Activity	0			
E-3.1	Electrical System Turnover Activities	108	±	x	
E-4.0	Installation of Electric Cables	7954	±	x	Inspection of accessible attributes has been accomplished under cable routing & ID program
E-5.0	Cable Terminations	12361	±	±	Inspection of accessible attributes plus documentation
E-6.0	Installation of Electric Equipment and Instrumentation	346	±	±	Inspection of accessible attributes plus documentation
E-6.1	Modification of Electric Equipment	209	±	±	Combine with RW 1.10 Inspect accessible attributes plus documentation

KEY:
± Document-Review documentation for completeness
± Hardware-Reinspect accessible attributes
x Hardware-Attributes not acessible for reinspection

A LIST OF ALL PQCI'S WITH QUANTITY AND REINSPECTION INFORMATION

PQCI #	PQCI TITLE	QUANTITY	DOC'T	HARDWARE	REMARKS
E-6.2	Installation of Terminal Boxes	108	±	±	Inspect accessible attributes plus documentation
E-6.6	Installation of Electric Penetrations	127	±	±	Inspect accessible attributes plus documentation
E-6.6.1	Installation of Feed Through Assy's for Elec Penetration	388	±	±	Inspect accessible attributes plus documentation
E-6.7.1	Installation of Batteries & Racks	9	±	±	Inspect accessible attributes plus documentation
E-1.10	Modification to Electrical Equipment	144	±	±	Combine with E-6.1 Inspection of accessible attributes plus documentation
E-1.10	Installation of Instruments	159	±	±	Inspection of accessible attributes plus documentation
M-1.00	Installation of Mechanical Equipment	11	±	±	Inspection of accessible attributes plus documentation

KEY:
± Document-Review documentation for completeness
± Hardware-Reinspect accessible attributes
x Hardware-Attributes not acessible for reinspection

A LIST OF ALL PQCI'S WITH QUANTITY AND REINSPECTION INFORMATION

PQCI #	PQCI TITLE	QUANTITY	DOC'T	HARDWARE	REMARKS
M-2.00	Installation of Rotating Equipment	28	±	±	Inspection of accessible attributes plus documentation
M-3.10	Installation of Cranes	1	±	±	Inspection of accessible attributes plus documentation
M-4.00	Complete Installations of Mechanical Equipment	2	±	±	Inspection of accessible attributes plus documentation
M-1.00	Disassembly Reassembly and Modification of Systems and Components	4	±	±	Inspection of accessible attributes plus documentation
MW-1.00 Rev 1	Welding and NDE of Mechanical Equipment	0			
P-1.00	Piping Completed Line Installation	80	±	±	Inspection of accessible attributes plus documentation
P-1.10	Piping Subassembly Field Installation RW	1858	±	±	Inspection of accessible attributes plus documentation

KEY:
± Document-Review documentation for completeness
± Hardware-Reinspect accessible attributes
x Hardware-Attributes not acessible for reinspection

A LIST OF ALL PQCI'S WITH QUANTITY AND REINSPECTION INFORMATION

PQCI #	PQCI TITLE	QUANTITY	DOC'T	HARDWARE	REMARKS
P-1.20	Piping Subassembly Shop Fab & Rework	994	±	±	Inspection of accessible attributes plus documentation
P-1.30	Valve and Inline Component Install	1247	±	±	Inspection of accessible attributes plus documentation
P-1.60	In Process Insp Fab/Installation Rework of Piping	167	±	x	
P-2.00	Pipe Component Supports Final Setting	5	±	±	Inspection of accessible attributes plus documentation
P-2.10	Pipe (Component) Support Installation	7057	±	±	Inspection of accessible attributes plus documentation
P-2.20	Pipe (Component) Supports Fabrication	6460	±	±	Inspection of accessible attributes plus documentation
P-2.30	Pipe (Component) Support P119/P129 Walkdown	0			Closed IR's from P-2.10 and P-2.20 will be reinspected to requirements of P-2.30 where installed

KEY:
± Document-Review documentation for completeness
± Hardware-Reinspect accessible attributes
x Hardware-Attributes not acessible for reinspection

A LIST OF ALL PQCI'S WITH QUANTITY AND REINSPECTION INFORMATION

PQCI #	PQCI TITLE	QUANTITY	DOC'T	HARDWARE	REMARKS
PP-1.10	Pipe Flange Installation and Rework	820	±	±	Inspection of accessible attributes plus documentation
PI-1.40	Field Fabrication and Installation of Piping Related Instrumentation	204	±	±	Inspection of accessible attributes plus documentation
PI-2.40	Off-Site Fabrication/ Weld of Pipe Related Instrument Supports	84	±	±	Inspection of accessible attributes plus documentation
PIW-1.00	Welding and NDE of Instrument Tubing and Fittings	642	±	±	Inspection of accessible attributes plus documentation
W-1.00	Fab/Weld/Heat Treat and NDE of ASME III Piping	31014	±	±	Inspection of accessible attributes plus documentation
R-1.00	Material Receiving Inspection	12007	±	±	Inspection of accessible attributes plus documentation

KEY:
± Document-Review documentation for completeness
± Hardware-Reinspect accessible attributes
x Hardware-Attributes not acessible for reinspection

A LIST OF ALL PQCI'S WITH QUANTITY AND REINSPECTION INFORMATION

PQCI #	PQCI TITLE	QUANTITY	DOC'T	HARDWARE	REMARKS
R-1.60	Receiving Area and Storage Facilities Inspection	45	±	x	Walk through of existing conditions plus documentation
R-2.00	Receiving Inspection for NSS Equipment	198	±	x	
R-2.10	Receiving Inspection for NSSS Equipment	42	±	x	
R-2.20	Receiving Inspection for NSSS Equipment Documentation	217	±	x	
S-1.00	Storage Area/ Facilities Surv	67	±	x	Walk through of existing conditions plus review of documentation
C-1.05	Material Testing Services	306	±	x	

KEY:
± Document-Review documentation for completeness
± Hardware-Reinspect accessible attributes
x Hardware-Attributes not acessible for reinspection

A LIST OF ALL PQCI'S WITH QUANTITY AND REINSPECTION INFORMATION

PQCI #	PQCI TITLE	QUANTITY	DOC'T	HARDWARE	REMARKS
SC-1.06	Recoating Work of Cont Bldg Liner Plate, Misc Steel, and Pipe Hanger Attachment	0			
SC-1.07	Agreement for Tech Services for Soils Laboratory Testing	0			
SC-1.10	Earthwork Subcontract Surveillance	0			
SC-1.11	Concrete and Unit Masonry Surface Sub/ Contract Surv	406	±	x	
SC-1.14	Subcontract Surveillance of Installation of Underpinning	0			
SC-1.16	Field Erected Storage Tanks/Subcontract Surveillance	108	±	x	

KEY:
± Document-Review documentation for completeness
± Hardware-Reinspect accessible attributes
x Hardware-Attributes not acessible for reinspection

A LIST OF ALL PQCI'S WITH QUANTITY AND REINSPECTION INFORMATION

PQCI #	PQCI TITLE	QUANTITY	DOC'T	HARDWARE	REMARKS
[illegible]-8.00	Subcontractor Surv of Installation of Soil and Crack Monitoring Devices	58			Remedial Soils Program
SM-1.00	Measuring and Testing Equipment Laboratory Surveillance Inspection	31	±	x	
SM-1.03	Heat, Ventilation and Air Conditioning Subconract Surveillance	828	±	x	
SM-1.04	Field Erected Component Cooling Water Surge Tanks Subcontracts Surveillance	108	±	x	
SM-1.17	Field Fabricated Incore Installation Tanks Subcontract Surveillance	183	±	x	
[illegible]-1.01	NDE-Subcontractor Surveillance	120	±	x	

KEY:
± Document-Review documentation for completeness
± Hardware-Reinspect accessible attributes
x Hardware-Attributes not acessible for reinspection

A LIST OF ALL PQCI'S WITH QUANTITY AND REINSPECTION INFORMATION

PQCI #	PQCI TITLE	QUANTITY	DOC'T	HARDWARE	REMARKS
T-1.00	Hydrostatic and Pneumatic Leak Testing	460	±	x	
T-1.10	Final Cleaning of Interior Surfaces of Piping, Mech Equipment and Instrumentation	0			
T-5.00	Lift Test for Cranes	0			
W-1.00	Welding, Heat Treatment and Non Destructive Examination	20251	±	±	Inspection of accessible attributes, radiography plus documentation
W-1.60	Area Inspection Of In Process Activities For Welding Q-Listed And ASME III Items	164	±	x	
C-1.01	Excavation in Q-Soil Area	NA			Remedial Soils Program

KEY:
± Document-Review documentation for completeness
± Hardware-Reinspect accessible attributes
x Hardware-Attributes not accessible for reinspection

A LIST OF ALL PQCI'S WITH QUANTITY AND REINSPECTION INFORMATION

PQCI #	PQCI TITLE	QUANTITY	DOC'T	HARDWARE	REMARKS
C-2.01	Gravel Packed Wells	224			Documentation and hardware is under remedial soils program
C-2.22	Field Fabrication Of Reinforcing Steel	0			
C-3.05	Inspection Of The Feedwater Isolation Valve Pit Jacking Operation	NA			Remedial Soils program
ZU-1.0	Installation Of Conduit & Box For Under Pinning Data Aquisitions System	61			Documentation and hardware is under remedial soils program
ZU-4.0	Installation Of Electrical Cables For Under Pinning Data Aquisition System	117			Documentation and Hardware is under remedial soils program
ZU-5.0	Cable Termination For Under Pinning Data Aquisition System	178			Documentation and Hardware is under remedial soils program

KEY:
± Document-Review documentation for completeness
± Hardware-Reinspect accessible attributes
x Hardware-Attributes not acessible for reinspection

A LIST OF ALL PQCI'S WITH QUANTITY AND REINSPECTION INFORMATION

PQCI #	PQCI TITLE	QUANTITY	DOC'T	HARDWARE	REMARKS
-6.0	Installation Of Instruments For Under Pinning Data Aquisitions System	25			Documentation and Hardware is under remedial soils program
-6.1	Installation Of Instrument Supports For Under Pinning Data Aquisitions System	29			Documentation and Hardware is under remedial soils program
-1.0	Instrument Checkout	67			Documentation and Hardware is under remedial soils program
-1.00	Storage & Maintenance Of Material Released To Mergentine	NA			Remedial soils program
-1.00	Storage & Maintenance Of Material Released To Spencer, White & Prentis	NA			Remedial soils program

KEY:
± Document-Review documentation for completeness
± Hardware-Reinspect accessible attributes
x Hardware-Attributes not acessible for reinspection

A LIST OF ALL PQCI'S WITH QUANTITY AND REINSPECTION INFORMATION

PQCI #	PQCI TITLE	QUANTITY	DOC'T	HARDWARE	REMARKS
4-1.0	Crack Monitoring Of The Feedwater Isolation Valve Pits Sub-Contract Surveillance	36			Documentation and Hardware is under remedial soils program
-1.0	Monitoring, Reducing and Reporting Under Pinning Instrument Data Sub-Contracts Surveillance	189			Documentation and Hardware is under remedial soils program
-1.004	Welding And NDE Of "Q" Material	8			Documentation and Hardware is under remedial soils program
-1.008	Excavation And Lagging Of Access Pits Piers and Drifts For UP	1			Documentation and Hardware is under remedial soils program
-1.010	Field Fabrication Of Steel Sets For Under Pinning Of Aux Bldg & FIVP	5			Documentation and Hardware is under remedial soils program

KEY:
± Document-Review documentation for completeness
± Hardware-Reinspect accessible attributes
x Hardware-Attributes not acessible for reinspection

A LIST OF ALL PQCI'S WITH QUANTITY AND REINSPECTION INFORMATION

The Remedial Soils Program has initiated the following additional PQCI's for which there are no Engineer-Constructor IR's, Inspections have all been conducted by CPCo supervision

UP-C-1.002	UP-C-1.011	UP-C-1.019	SL-2.0
UP-C-1.003	UP-C-1.012	UP-C-2.003	
UP-C-1.005	UP-C-1.013	UP-C-2.004	
UP-C-1.006	UP-C-1.014	UP-C-2.005	
UP-C-1.007	UP-C-1.015	UP-C-2.007	
UP-C-1.009	UP-C-1.016	UP-C-2.008	
UP-C-1.011	UP-C-1.017	UP-C-2.009	
UP-C-1.019	UP-C-1.018	UP-C-2.010	
UP-C-1.020		UP-C-2.019	
UP-C-1.023		UP-C-2.042	
		UP-C-2.150	
		UP-C-3.001	
		RM/RS-1.00	

KEY
± Document-Review documentation for completeness
± Hardware-Reinspect accessible attributes
x Hardware-Attributes not accessible for Reinspection

APPENDIX B

PQCIs To Be Verified by Review of Documentation Only

The following PQCIs are deemed inaccessible for attribute reinspection. Hardware acceptability will be established by documentation validation where possible and by supplemental verification efforts where documentation review alone does not establish hardware acceptability:

1. Remedial Soils Program

C-1.02 - Compacted Backfill

C-1.09 - Inspection of Crack for BWST Foundation Ring Wall

C-2.00 - Plant Area Dewatering

C-2.01 - Gravel Packed Wells

C-2.02 - Permanent Gravel Packed Wells

C-2.05 - Drilling in Q-Listed Areas for Underpinning Operations

EU-1.0 - Installation Of Conduit and Boxes For UP Data Acquisition System

EU-4.0 - Installation Of Electrical Cables for UP Data Acquisition System

EU-5.0 - Cable Termination for UP Data Acquisition System

EU-6.0 - Installation Of Instruments For UP Data Acquisition System

EU-6.1 - Installation Of Instrument Supports For UP Data Acquisition System

IC-1.0 - Instrument Checkout For UP Data Acquisition

SCM-1.0 - Crack Monitoring Of FW Iso Valve Pits Subcontractor Surveillance

SD-1.0 - Monitoring, Reducing and Reporting UP Inst. Data Subcontractor Surveillance

UP-C-1.004 - Welding And NDE of Q-Material

UP-C-1.008 - Excavation & Lagging of Access Pits, Piers and Drifts For UP

UP-C-1.010 - Field Fabrication Of Steel Sets for UP Of Aux. Building and FIVP.

The above PQCIs relate to the remedial soils program which has been established as a separate project and for which inspections have been performed under the direction of MPQAD since August 1982. Soils work and related documentation have been reviewed by MPQAD for acceptability and corrective measures instituted where required.

2. Reinspection of Expansion Anchors and Rock Bolt Installation.

C-1.51 - Retest Verification of Drop In Expansion Anchors

C-1.52 - Reinspection of Seismic Category I Pipe Support Expansion Anchors.

C-1.56 - Reinspection of Rock Bolt Installation

The above PQCIs relate to reinspections which have been completed and results reported to the NRC.

3. In-Process Activities.

E-3.1 - Electrical System Turnover Activities

E-1.60 - In Process Inspection of Electric Item Installation

R-1.60 - Receiving Area and Storage Facilities Inspection

W-1.60 - Area Inspection Of In Process Activities For Welding Q-listed and ASME III Items

S-1.00 - Storage Area/Facilities Surveillance

P-1.60 - In Process Inspection of Fabrication/Installation Rework of Piping

The above PQCIs relate to in-process activities where affected work would now be completed and any reinspection would be of completed work covered by other PQCIs, e.g., PQCIs E-6.0, W-1.00 and PW-1.00. In the cases of R-1.60 and S-1.00, these are an inspection or surveillance of general facilities maintenance which can be repeated, but not on a basis which would have any meaning relative to conditions existing when the inspections were made. In short, a single inspection can attest to conditions existing today without relation to past conditions.

4. Surveillance of Subcontractor Activities.

SC-1.05 - Material Testing Services

SC-1.11 - Concrete and Unit Masonry Surface Subcontract Surveillance

SC-1.16 - Field Erected Storage Tanks Subcontractor Surveillance

SC-8.00 - Subcontractor Surveillance of Installation of Soil and Crack Monitoring Devices

SE-1.00 - Measuring and Testing Equipment Laboratory Surveillance Inspection

SM-1.03 - HVAC Subcontract Surveillance

SM-1.04 - Field Erected Component Cooling Water Tank Subcontractor Surveillance

SW-1.01 - NDE Subcontractor Surveillance

SM-1.17 - Field Fabricated Incore Installation Tank Subcontractor Surveillance

The above PQCIs all relate to surveillance of subcontractor activities. Where work has not been completed, such surveillance activities can be repeated when safety related work resumes. Otherwise, they can be evaluated only by a review of documentation and a single walk down of affected areas for assessment of current inplace conditions, but not of past activities. In addition, SM-1.03 - HVAC Subcontractor Surveillance, relates to activities outside the scope of this quality verification program. In depth participation by CPCo continues in this work.

5. Hydrostatic and Pneumatic Leak Testing.

T-1.00 - Hydrostatic and Pneumatic Leak Testing

CPCo has already conducted an extensive evaluation of hydrostatic and pneumatic leak testing and corrective actions relative to such evaluation are being conducted separately from this reinspection program.

6. Special "One Time Only"Testing.

C-2.03 - Drawdown Recharge Test.

This is a test required to have been performed once and which demonstrated acceptable results. The remedial soils program which is not within the scope of this verification program would provide any necessary justification for a repeat of such a test.

7. Previously Documented Responses to the NRC.

C-6.00 - Mechanical Splicing of Reinforcing Bars

This PQCI relates to necessary inspections of the "Cadweld" process of mechanically splicing reinforcing steel. The constructor's processes were the subject of extensive investigation by the NRC in 1973 and 1974 which determined that corrective action had been identified and implemented including requalification of personnel, review of work instructions for Class I work, CPCo QA review of work procedures, and audits of Class I work. Affected mechanically spliced rebar is now inaccessible due to concrete placement. CPCo overinspection of any continued use of this process in remaining construction will be a continuing process.

C-7.00 - Erection of Reactor Building Liner Plate

This PQCI relates to the preparation and installation of steel plates which provide the inner surface for the containment building. The liner is now accessible only from one side, being backed up by reinforced concrete on the outside. Extensive review was made by CPCo in 1974 of the accuracy of liner plate records. Controls implemented after NRC investigation were evaluated and found satisfactory. In 1977, a deformation of liner plate occurred due to freezing of an embedded construction water line. This resulted in extensive removal and replacement of steel liner plates. Quality of the liner plate installations have been verified through radiography, and extensive CPCo involvement in the installation and repair. The NRC has reviewed actions taken and closed its reports on the installation of steel liner plates.

C-1.11 - Drilling and Grouting of Rebar

This PQCI provides documented instructions for the drilling and grouting of reinforcement steel and in itself is a corrective action for previously cited deficiencies that such a procedure did not exist. Its usage is documented evidence of the implementation of corrective action.

C-5.10 - Shear Connector Installation

This PQCI is used to assure that the proper installation of shear connectors has been accomplished which tie the supporting beams, steel and concrete floor decking into a composite structure. Since the shear

connector serves as concrete reinforcement, it is not visible once the concrete is placed. NRC reviewed corrective actions relative to installation problems with Nelson stud shear connectors and closed reports relative to this problem. PQCI 5.10-IRs document accomplishment of required inspections.

C-8.50 - Inspection of Surface Preparation Application Touch Up and Repair of Coating

This PQCI addresses the preparation of concrete surfaces and the application of a coating to seal the surface to prevent contamination being absorbed into the concrete. Once the coating is applied, the surface preparation cannot be examined. The final coating can be examined for presence but not for the process steps that applied the coating.

C-1.60 - Concrete Drilling and Cutting Reinforcing Steel

This PQCI describes the quality control steps necessary in drilling concrete to minimize cutting of reinforcing steel. Completion of the PQCI-IR identifies whether proper inspections were made and results encountered and documented. Since the holes will have been drilled, and items either mounted in the holes or the holes grouted, it is not possible to physically inspect the concrete or the reinforcement. This is particularly true where expansion anchors have been used which cannot be nondestructively removed.

8. Post Tensioning Requirements.

C-9.00 - Installation-Post Tensioning Components

C-9.10 - Post Tensioning System Stressing

C-9.20 - Containment Building Tension Reinspection

These PQCIs document the re-routing of tendon sheathing, tendon installation and tensioning. CPCo identified a problem to the NRC in 1977 indicating the misplacement of two tendon sheaths and the omission of two sheaths. The misplacement of the two sheaths brought about approved re-routing of the tendons. The omitted sheaths were replaced. The NRC conducted a special investigation of the corrective measures in May 1977 and deemed them acceptable. A final 50.55(e) report was issued by CPCo in August 1977.

9. Concrete Placement Activities.

C-1.30 - Concrete Placement Inspection

C-1.31 - Inspection of Concrete Activities

The PQCIs relate to inspections during placement of concrete. Where concrete has been placed, inspections will be made in accordance with C-1.40 "Concrete Post Placement Inspection." Where concrete has not been placed, a preplacement inspection will be required before placement when construction is resumed.

C-1.80 Installation of Concrete Unit Masonry

C-1.81 Installation of Concrete Unit Masonry

These PQCIs relate to the installation of concrete block walls many of which have been removed as a result of subsequent plant modifications. The remaining walls can be inspected for presence of the wall and visual quality but not for the process controls necessary to properly erect them.

C-4.10 - Batch Plant Inspection

This PQCI was prepared for necessary controls of concrete batch plant activities. The batch plant has now been removed from the site. Concrete necessary for completion of the plant is procured from an offsite supplier. Currently concrete is procured only for the Soils program and for non-Q construction. Reinspection is limited to review of documents of past operations. Adherence to this PQCI will be enforced on procured concrete for balance of plant safety related constructions when construction is resumed.

10. Field Fabrication

C-2.20 - Field Fabrication of Miscellaneous Steel.

This PQCI addresses fabrication of steel which will have been consumed and erected into items which will be inspected if accessible, under other PQCIs.

11. NSSS Receiving Inspection Activities.

R-2.00 - Receiving Inspection for NSSS Equipment

R-2.10 - Receiving Inspection for NSSS Equipment

R-2.20 - Receiving Inspection for NSSS Equipment Documentation

These PQCIs address the constructor's receiving inspection of components and materials used by the NSSS supplier constructor. In general, the items will have been installed by that contractor. Any accessible attributes will have been confirmed by activities of the NSSS constructor.

12. Other.

C-1.70 - Installation of Pressured Concrete Pipe

This PQCI covered the installation of the main water line from the river to the cooling pond. This line is now submerged as the pond is full. Inspection of internal surfaces could be performed through use of divers. Integrity has been demonstrated through use of the system.

E-4.0 - Installation of Electrical Cables

One hundred percent reinspection of installed cables has been completed and reported under a separate program. Documentation has not yet been reviewed.

STATISTICAL SAMPLING PLAN
INDEX OF TOPICS

SAMPLING PLAN FOR CPCo QUALITY VERIFICATION PROGRAM

1. Purpose:

To provide a statistically valid method, under the direction of Consumers Power Company, of confirming the acceptable quality status of safety related procurement and construction activities completed and inspected by the Engineer-Constructor Quality Control personnel prior to December 2, 1982.

2. Scope:

This plan applies to closed Inspection Records (IR's) related to specific Project Quality Control Instructions (PQCI's) where the quantity of closed IR's is in excess of one hundred and for which there are no other ongoing or planned programs to confirm quality.

3. References:

MIL-STD-105D Change Notice 2 (March 1964), Sampling Procedures and Tables for Inspection by Attributes.

US NRC I&E Bulletin 79-02, Reinspection of Anchor Bolts.

MIL-HDBK-53-1A 1 FEB 1982 - Guide for Attribute Lot Sampling and MIL-STD-105.

4. Definitions:

Population: The entire quantity of closed (IR's) relating to a specific PQCI.

Time Centered: The term used to describe the ordering of lots, and items within a lot, based upon the time sequence in which an IR was initiated

Homogeneity: Homogeneity implies that a series of units of product should be alike or similar in nature. Homogeneity under this plan will be achieved by utilizing specific project Quality Control Instruction (PQCI) categories covering like activities and generally within a defined time period.

Acceptance Number (AC): The number of nonconformances permitted to be found in a sample of a lot without rejecting the lot for a specific acceptable quality level.

Rejection Number (Re): The number of nonconformances found in a sample of a lot that requires rejection of the lot for a specific acceptable quality level.

Acceptable Quality Level (AQL): The AQL is the maximum percent of nonconformances that, for the purpose of sampling inspection, can be considered satisfactory as a process average.

Attribute: An attribute is a characteristic or property which is appraised in terms of whether it does or does not comply with a given requirement.

Inspection by Attributes: Inspection for which the item or attribute is classified simply as conforming or nonconforming without regard for the degree of nonconformance.

Limiting Quality (LQ): The term applies to sampling plans that provide not less than a specified percentage of quality protection. Consumers Power Company has selected an LQ of five percent which provides 95% confidence that at least 95% of inspection elements of the lot/population will be acceptable.

Lot: A quantity of items, such as completed inspection records covering the same activity, equal to or less than the total population and representing a subdivision of that population.

Nonconformance: A deficiency in characteristic, documentation or procedure which renders the quality of an item unacceptable or indeterminate.

Pa - Probability of Acceptance: The probability of accepting a lot with a predetermined percent defective, when a given sample plan is used.

Random Sample: A sample taken from a population or lot in which each of the items has an equal chance of being selected, regardless of its quality. If the units in a lot have been arranged without bias as to their quality a sample drawn anywhere in the lot will meet the requirements for randomness [1]. PQCI's are logged in accordance with the date they were opened, totally independent of the

(1 Mil-Hdbk - 53 -1A Para 12.2)

resulting quality, thus sampling by logged date or other means meets this requirement.

Sampling Plan: A sampling plan indicates for a given lot size the number of items or components from each lot (sample size or a series of sample sizes) which are to be inspected from the lot and the criteria for determining the acceptability of the lot.

5.0 Plan Content

5.1 Detailed Scope: This sampling plan applies to closed Engineer-Constructor IR's related to specific Project Quality Control Instruction (PQCI's) for Balance of Plant safety related materials, components, systems and structures, which are not covered by other ongoing programs to confirm quality. It is applicable to closed IR's where the quantity of closed IRs for a given PQCI is in excess of 100 and where it has been demonstrated by one hundred percent inspection of a significant portion of each population that the accepted quality level of that population has been established. The specific PQCIs and quantities of closed IRs that make up this total population are identified in Appendix A. That appendix also indicates whether both hardware and documentation are planned to be verified or whether documentation alone is planned to be reviewed because of inaccessibility of hardware features.

5.2 Description of Sampling: Sampling inspection is that type of activity in which units of product are selected at random and examined for one or more quality attributes. Sampling inspection is an acceptable way of determining the conformance or nonconformance of items to specified quality requirements. The amount of inspection can be increased where the product quality is deteriorating or reduced where the level of quality is high[2].

(2 Mil-Hdbk - 53-1A)

Statistical sampling methods force one hundred percent verification of quality whenever the required quality level has not been attained. The statistical methods proposed herein are designed to provide 95 percent confidence that the inspectable elements of the entire population are acceptable based upon the acceptability of items or attributes previously 100 percent inspected to provide a satisfactory quality baseline. This is consistent with past NRC recommendations related to reinspections of safety related items[3] and will produce results at least equivalent to those expected from 100% inspection.

The statistical quality control methods proposed are in accordance with MIL-STD-105D Tables I, IIA and VIIA. MIL-STD-105D is probably the most widely used sampling standard in the United States. This Program is a rigorous application of statistical quality control methods to assess the quality of nuclear power plant construction.

(3 NCR I&E Bulletin 79-02, Appendix A)

5.3 Sampling Process: The application of statistically valid sampling plans requires lot sizes to be large enough to permit taking of a sample quantity sufficient to limit the risk of accepting nonconforming items. When quantities are not large enough, one hundred percent reinspection will be performed. Because of the Limiting Quality planned to be used, populations of PQCI items are required to be greater than 50 to be eligible for sampling further; however, CP Co has committed to performing 100 percent inspection of PQCIs having 100 or less IRs. In addition, populations to be sampled must be first qualified by having demonstrated acceptable quality levels through one hundred percent inspection of a quantity of items sufficient to provide adequate confidence the existing quality level is acceptable. When 100% inspections have established this confidence, CPCo will consider that the one hundred percent inspection of a significant portion of each PQCI has established a valid basis for statistical sampling of any remaining quantities.

The statistical sampling plan will be conducted as follows:
Two lots for each PQCI will be sampled at normal sampling levels in accordance with MIL-STD-105D, Tables I, IIA and VIIA to a limiting quality of 5 percent at a 95 percent confidence level. If these two successive lots validate that the required level of quality has been maintained, remaining lots will be sampled to the same criteria, but at reduced sampling levels per MIL-STD-105D, Table IIA.

The Executive Manager may recommend to the NRC discontinuance of further sampling where quality levels have demonstrated that past Engineer-Constructor inspections have provided acceptable control of quality.

5.3.1 Switching: The sampling plan will include switching procedures to provide Consumers Power Company the protection provided by the tightened plan, when evidence that the desired quality level is below prescribed levels and the advantage of the reduced plan, when evidence that the desired quality level has been achieved. Due to the known quantities of specific PQCI's available for sampling (non-continuous production run) the following switching rules will be implemented:

- o Establish acceptable base quality level through 100% reinspection.
- o Single normal plan for two lots.
- o From single normal, switch to single reduced, after acceptance of two consecutive lots. Switch back to single normal after the first rejected lot.
- o From single normal, switch to single tightened, after the first rejected lot for two consecutive lots, then switch back to single normal if both lots are acceptable. If either or both of the single tightened lots are rejected switch to 100% inspection of lots, until two consecutive lots are accepted.

5.4 Sampling Tables: The following tables indicate sampling information for Single Normal, Single Reduced and Single Tightened sampling plans:

SINGLE NORMAL

Population Lot Size N	Sample Size n	Accept Number Ac	Reject Number Re
2-50	ALL	0	1
51-500	50	0	1
501-1200	80	0	1
1201-3200	125	2	3
3201-10,000	200	3	4
10,001-00	315	7	8

SINGLE REDUCED

2-50	ALL to 20	0	1
51-500	20	0	1
501-1200	32	0	1
1201-3200	50	1	2
3201-10,000	80	1	2
10,001-00	125	3	4

SINGLE TIGHTENED

0-80	All	0	1
80-500	80	0	1
500-1200	125	0	1
1201-3200	200	3	4
3201-10,000	315	5	6
10,001-00	500	10	11

The specific PQCIs and total quantities of closed Inspection Records to which these lot and sample sizes apply are included in Appendix A to the Quality Verification Program.

5.5 Determination of Lot Sizes: A reinspection lot is a collection of units of product (closed inspection records of like activities) from which a sample is drawn and inspected to determine conformance with the acceptance criteria and may differ from a collection of units designated as a lot for other purposes such as production or procurement[4]. The size of the lot is one of the factors that determines the sample size to be used in sampling inspection. For this program the formation of each lot is planned to be at least equal to the normal sample size for the entire population; thus for a population of 1000, the minimum lot size would be 80; the optimal lot size would be 281 or greater.

Normally the total quantity of the population will not be a direct multiple of the lot size. After dividing the population quantity

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(4 Mil-Hdbk - 53 Para 6.4.1)

by the lot quantity, any residual quantity may be combined with the last lot, or be treated separately for sampling convenience so long as the sample size is in accordance with MIL-STD-105D. Lots will be time centered. The purpose of this is to further enhance homogeneity for each lot and to identify and isolate conditions which may have occurred in specific time periods during construction of the Midland Plant. This method of stratifying samples and lots, yields more information for corrective action than sampling the entire population. Quantities used for determining lot sizes will exclude inspection records where reinspections have occurred, since this will preclude counting the same item twice. A limited number of PQCI's cover like activities. These will be grouped, where appropriate, to provide a single population. An example of such grouping would be PQCI's E-6.1 and RW-1.00, "Modification of Electrical Equipment."

5.6 Sample Selection: Samples will be selected by dividing the lot size by the sample size indicated by MIL-STD-105D Tables I and IIA for normal sampling. For example, for a lot of 500, the sample size is 50. In this case any of the first 10 IRs and every tenth IR for a specific PQCI would be selected for reverification. This assures randomness, since the manner of filing is totally independent of the quality of the item and of the person selecting the sample, and all IRs have an equal chance of selection. It also provides a cross section as related to time, since the IRs are

logged by the date they were opened. Where there are multiple lots of the same size, the .am. method may be used, so that each sequential lot is time centered with the preceding lot and each item sampled is time sequenced within the lot.

5.7 Substitution: Where accessibility is found to inhibit inspection of attributes of a specific item intended for sample reinspection, the Executive Manager-MPQAD has sole authority to direct the selection of a substitute random item for reinspection from the same lot, or in the event that no item(s) is accessible for reinspection, a documentation review of the inaccessible item(s). Justification for this substitution will be documented.

5.8 Increased or Reduced Sampling: The Executive Manager-MPQAD has authority to direct 100% reinspection at any point where the ability to conduct a valid sample reinspection is determined to be impractical. Switching to reduced or tightened sampling will require prior approval by the Executive Manager-MPQAD in accordance with criteria described in this plan.

5.9 Treatment of Reinspection Deficiencies in Verification Sampling Program: Deficiencies identified by reinspections will be recorded on a nonconformance report and promptly reported to MPQAD-QA and others for processing per procedure. The party responsible for recommending the initial disposition of the nonconformance will

review the intended disposition with MPQAD-QA prior to further processing of the nonconformance. The purpose of this MPQAD-QA review is to insure proper treatment of the nonconformance in the sampling analysis. Deficiencies determined to be acceptable by "use as is" will be evaluated by Project Engineering to determine whether the design criteria requirement which the attribute failed to meet will be modified to clarify the inspection requirement. If Project Engineering modifies the requirement on a generic basis, the deficiency will be considered "acceptable" for purposes of sample analysis. The final decision as to whether the deficiency constitutes a sample defect will be made by the Executive Manager-MPQAD. This decision and its justification will be documented.

5.10 Deficiencies Found During Reinspection of Documentation for Inaccessible Attributes: The verification process for inaccessible attributes is discussed in Section 6.5 of the Quality Verification Plan. As noted in that section, any documentation deficiencies will be noted on the verification IR, entered on a nonconformance report and cross referenced to the original IR. The treatment of sampled lots containing nonconformances will be determined on a case by case basis and further verification requirements will be determined taking into account the disposition of the nonconforming condition.

6.0 Documentation and Reports

6.1 Documentation of Results: Results of sampling reinspection will be documented on IR's and statused to specifically identify the PQCI, the lot number, the quantity in the lot, the quantity inspected, the quantity found acceptable, the NCR's identifying any deficiencies and the results of the nonconformance disposition, and acceptability of the lot.

6.2 Documentation of Nonconformances: Nonconforming conditions will be reported and dispositioned in accordance with approved procedures. Disposition of the nonconformances will include necessary actions to be taken on the balance of the lot; e.g., screen balance of the lot for the rejected attributes, or 100% inspect the balance of the lot.

6.3 Reports: The results of the sampling plan for each lot related to each PQCI will be included in reports made by the CPCo BOP Quality Control Superintendent and the Quality Assurance General Superintendent QA as described in section 7.3 of the Quality Verification Program.

7.0 Implementation: This plan will be implemented as directed by the Executive Manager MPQAD. The organizational responsibilities are the same as shown in section 8 of the Quality Verification Program. In addition, MPQAD BOP Quality Control shall have the responsibility of selecting the IR's to be sampled from lot sizes predetermined by MPQAD-QA.

Mr. Wiznick -
I am holding original.
Will it be responding?
James

Consumers Power Company

James W Cook
Vice President - Projects, Engineering and Construction

General Offices: 1945 West Parnall Road, Jackson, MI 49201 • (517) 788-0453

April 22, 1983

Mr J G Keppler, Administrator, Region III
Nuclear Regulatory Commission
799 Roosevelt Road
Glen Ellyn, IL 60137

MIDLAND NUCLEAR COGENERATION PLANT -
MIDLAND DOCKET NO's 50-329, 50-330 -
CONSTRUCTION COMPLETION PROGRAM
FILE 0655, B1.1.7 SERIAL 22027

REFERENCES 1. LETTER TO MR J W COOK DATED MARCH 28, 1983 FROM MR J G KEPPLER REGARDING CONSTRUCTION COMPLETION PROGRAM

2. LETTER FROM MR J W COOK DATED APRIL 6, 1983 TO MR J G KEPPLER REGARDING CONSTRUCTION COMPLETION PROGRAM THIRD PARTY OVERVIEW

Your letter of March 28, 1983 regarding the Construction Completion Program (CCP) consisted of Parts A, B and C. My letter of April 6, 1983 to you replied to items A5, all of Part B, all of Part C and to Enclosure 1, the Protocol document for the Independent Design Verification. At the April 13, 1983 meeting in Bethesda on Independent Design Verification (IDV), we provided additional discussion and clarification of the communications between the parties during the IDV.

The enclosure to this letter provides responses to items A1, 2, 3, 4, 6, 7, 8 and 9 of your letter of March 28, 1983.

Based upon this letter and my April 6, 1983 letter, we believe that complete responses have now been provided to your March 28, 1983 letter.

James W. Cook

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JWC/GSK/bjb

CC Atomic Safety and Licensing Appeal Board (w/o att)
CBechhoefer (w/o att)
FPCowan, ASLB (w/o att)
JHarbour, ASLB (w/o att)
MMCherry (w/o att)
FSKelley (w/o att)
HRDenton, NRC (w/att)
WHMarshall (w/o att)
WDPaton, NRC (w/o att)
BStamiris (w/o att)
MSinclair (w/o att)
LLBishop (w/o att)

Response To NRC Questions On
Construction Completion Program

QUESTION A1

"1. Because of problems identified by the NRC during the special inspection of the diesel generator building and because similar problems were found in other areas of the plant during subsequent inspections by CPCo, we believe that 100% reinspection of accessible safety related structures, systems and components is warranted. Should you intend doing less than 100% reinspection, please provide the details of your proposed program and the technical rationale for accepting a sampling approach."

RESPONSE

Consumers Power Company has developed two major programs already committed to in addition to the Quality Verification Plan (included in the CCP). These two programs include the following 100% verification efforts:

A. Verification of approximately 13,500 closed Inspection Reports through reinspection of approximately 7,000 piping supports and restraints.

B. Reinspection of accessible attributes of approximately 9,000 1-E cables installed to PQCI E-4.0 including cable routing and identification.

The Quality Verification Plan includes the following 100% reinspections:

A. All closed Inspection Reports (IR) that contain In-Process Inspection Notices (IPINs). This involves approximately 4,300 IRs.

B. All closed IRs that contain Deficiency Reports (DR). This includes approximately 4,500 IRs.

C. All closed IRs associated with specific PQCI which have less than 100 IRs.

In addition, the Quality Verification Program also requires that 100% inspection of the remaining PQCIs will be initiated and continued until it has been demonstrated with 95% confidence that 95% of the inspectable elements meet quality requirements. Upon demonstration of the 95% quality level, Consumers Power Company will reconsider the basis on which to continue the verification effort for the remaining population of each PQCI. This may include the statistical sampling techniques as noted below.

Exceptions to the plan may be taken in those cases where other means of verifying quality have been demonstrated as described in the plan details below.

D. Complete reinspection when QC insp. failed
E. Address Attributes not in Program

Quality Verification Program Description

Consumers Power Company has prepared a Quality Verification Program to confirm the quality status of safety-related equipment and construction activities completed and inspected by the Engineer/Quality Control personnel prior to December 2, 1982.

The program will cover all closed Inspection Records of inspections performed prior to December 2, 1982, except:

A. Remedial Soils Work which has been under the direction of Consumers Power Company quality personnel since it began.

B. HVAC work which has been under the direction of Consumers Power Company QA personnel since the major reorganization in June 1981.

C. Verification of 1-E cable routing and identification and verification of ASME hangers which are being performed under separate reinspection programs as noted previously.

D. B&W Construction Company activities which have been performed under B&W Quality Assurance Programs.

The quality verification program will address safety related equipment, systems and structures in which the prior 100% inspections have been performed and completed under the direct supervision of the Engineer/Constructor. Such inspections were performed in accordance with approximately 100 Project Quality Control Instructions (PQCIs) that specified the inspection requirements to be achieved by quality control personnel. The program will include PQCIs for which no other verification activity has taken place or is scheduled to take place. There are closed IRs for approximately 139,000 primary inspections. Closed IRs are those where the Engineer/Constructor has completed a 100% inspection of installed hardware. Where a reinspection has occurred on a specific commodity, the latest IR will be addressed.

This program will assess the validity of prior inspections and provide assurance of the quality of completed work. To accomplish this, accessible attributes of items covered by completed IRs will be reinspected. For inaccessible attributes, the original inspection documents will be reviewed for evidence of acceptability and additional justification will be developed as required to support the validity of inspections associated with such PQCIs. Each IR relates to a specific PQCI. PQCIs are organized by discipline and further structured to activities within that discipline, eg, there are separate PQCIs and corresponding IRs for preplacement, placement and post-placement inspections of concrete. Closed Inspection Records related to each PQCI provide a population of like activities.

To assess the validity of these past completed inspections, Consumers Power Company will reinspect on a 100% basis, the accessible attributes of all populations where the quantity of closed IRs is less than one hundred. In addition, where the population of closed IRs for a specific PQCI is more than 100, Consumers Power Company will reinspect on a one hundred percent basis a

sufficient number of items to establish a quality baseline and predict with 95% confidence that the quality level is in excess of 95% for the specific PQCIs. Consumers Power Company will then make a determination as to whether further verification of specific PQCI populations can be conducted by a statistical sampling plan. This sampling approach, which is based on a nationally accepted standard and is consistent with past NRC recommendations related to reinspections of safety-related items, is fully described in the Quality Verification Program. The NRC Resident Inspection staff will be informed of such a determination before implementation of a sampling effort.

Any nonconforming condition observed during the implementation of this program other than those previously identified on nonconformance reports, will be identified by a nonconformance report and will be dispositioned in accordance with approved procedures.

Reinspections will be conducted in accordance with PQCIs which have been reviewed-revised since implementation of the Construction Completion Program (CCP) and in accordance with current design drawings and specifications. An acceptable reinspection will validate the installed hardware and, for the purposes of the program will validate the prior IR. If an apparent deficiency exists between the as built condition of the item and the referenced design drawing or specification, a further check will be made to determine the design basis against which the original IR was completed. This check as well as the current stage of construction will allow a determination to be made as to whether a nonconformance of "as built vs design" exists.

Documentation of deficiencies will be noted on the newly initiated IR, entered on a nonconformance report and will be cross referenced to the original IR.

Program elements that differ from that described above will be treated as follows:

1. Exceptions to this program may be taken where objective evidence is available of a CPCo overinspection of the Engineer/Constructor's inspections and where such overinspection demonstrates effective quality control and provides the basis to verify acceptability of the items or attributes covered by past IRs and validate the original inspection with minimal or no further reinspection or review. Where such exceptions are proposed to be taken, a special report will be prepared by the MPQAD-QA Superintendent for review and approval of the Executive Manager-MPQAD. This report will contain full justification for the exception. The Executive Manager-MPQAD will inform the NRC Resident Inspection staff whenever he has made a decision to allow such a exception to the program prior to implementing the exception.

2. There are 55 PQCIs which cover activities that are inaccessible for reinspection. These include rebar installation, placed concrete, containment building tendon reinspection, and PQCIs relating to surveillance of subcontractor actions. Documentation relating to these PQCIs will be reviewed as indicated in this program. These PQCIs, either individually or by groups, will be reviewed and

justification will be developed by a document review to support the validity of completed inspections associated with these PQCIs. This justification or recommendation for additional verification activites, will be provided by the MPQAD-QA Superintendent to the Executive Manager-MPQAD for decision and approval.

3. The Executive Manager may group special populations of PQCIs or IRs that may be treated as a unique population provided all other elements of this program are applied to this unique population.

Reports And Documentation

Results of reinspections and document reviews will be recorded on IRs opened specifically for this pupose. Each such IR will cross-reference to the existing IR. A notation will be made on the new IR to identify whether the existing original inspection covered by the IR was validated, rejected or is indeterminate. The new IR will provide the basis to document the quality status of the items or attributes being reinspected.

A weekly written report will be made jointly by the MPQAD QC and QA Superintendents to the Executive Manager of MPQAD summarizing the results of the program. The Executive Manager will inform the CPCo Site Manager, the Vice President, Projects Engineering and Construction and the Engineer/Constructor Project Manager of the status of the Quality Verification Program on a biweekly basis. The Executive Manager-MPQAD will provide a monthly report of Quality Verification Program results to the CPCo Site Manager and Vice President, Projects Engineering and Construction and the Engineer/Constructor Project Manager. This report will be made available to the Construction Implementation Overviewer and the NRC.

The Executive Manager-MPQAD will have total overall responsibility and authority for the development and implementation of all quality related aspects of this verification program which will be solely under the direction of MPQAD.

QUESTION A2

"2. A description of the reinspection program for accessible systems and components important to safety."

RESPONSE

The Midland Nuclear Plant has been designed and constructed with a two level philosophy of quality classification. Those structures, systems or components which are safety related (such as those identified in Regulatory Guide 1.29, Section C.1, as modified by the Midland FSAR) are designated "Q". All other structures, systems, and components are designated "Non-Q".

Items that are considered important to safety, but that are not classified as "Q" are being addressed by a separate program. This program was developed to address the generic safety task A-17 "System Interaction," and was described in a letter, J W Cook to H R Denton dated January 28, 1983. This Systems Interaction Program will provide assurance that equipment important to safety, because of its potential interaction with safety related (Q) equipment, has been evaluated to ensure that such equipment will not compromise the capability of safety systems to perform their intended functions. The protection of the safety-related systems is part of the design process. In the installation of these systems coupled with the field routing of certain commodities, however, it is possible that new items become important to safety. To this end the Systems Interaction Program describes a comprehensive effort which includes an integrated series of walkdowns to identify potential interactions. The evaluation of these potential interactions will assure that equipment important to safety has been identified, and that its potential for degrading the performance of safety systems has been resolved.

The seismic II/I and proximity walkdown, which forms an important part of the Systems Interaction Program, is being conducted in part by the Engineer/Constructor and in part by the consultant who performed this work for other sites. This inspection is separate from the CCP, but it is being integrated into CCP activities for purposes of scheduling the availability of uncongested areas, areas that are sufficiently complete to warrant inspection and the use of inspection aids such as scaffolding.

Three additional walkdowns identified in the Systems Interaction Program are HELBA, missiles and flooding. These walkdowns serve to further increase our confidence that the primary walkdowns are effective with respect to identifying equipment important to safety. These walkdowns are performed by individuals with perspectives different from the proximity and Seismic II/I walkdown teams. All of these walkdowns are expected to occur in 1983 and early 1984.

The design engineering process, the construction process and the Systems Interaction Program form a multi-layered approach to assuring that systems important to safety will not inhibit safety systems from performing their intended function. Once the plant is complete and turned over to Nuclear Operations Department, equipment important to safety is addressed by Nuclear Operations Department Standards A21 and the QA Topical Report CPC-2A. This

list starts with the construction Q list then adds structures, systems components and chemicals considered important to safety via a detailed review of the equipment data base. Items placed on the operations Q list are then subject to applicable elements of the QA program from then on regardless whether they are safety-related or important to safety.

QUESTION A3

"3. A description of the measures you intend to institute to assure that QC reinspection will be sufficiently independent of team controls."

RESPONSE

The QC reinspection effort is independent of team controls although work schedules will be coordinated on a team level. This independence is maintained as follows:

Quality Verification Plan

This effort is solely under the responsibility of MPQAD to plan, implement and evaluate results. MPQAD personnel will coordinate with construction for services support. The Quality Verification Program will be implemented under MPQAD Procedures.

Team Activities-Status Assessment And Systems Completion

The Team Quality Representative and other MPQAD members assigned to the teams are independent of team control. The system team charter is defined in Field Engineering Procedure FPG 9.700, which indicates that the team quality representative will only receive schedule input from the team supervisor and that other technical and administrative direction will come from MPQAD management. MPQAD approves this procedure and MPQAD Procedure N-4 defines this interface.

All quality department personnel assigned to the team report to the Team Quality Representative who reports solely through the MPQAD management chain.

In addition, the Team Quality Representative is located, based on his permanent reporting assignment, within the MPQAD organization. He will, of course, be required to spend most of his time with the team on field assignments but nevertheless continues as a permanent member of MPQAD.

Organization charts show the reporting channels for the team quality members to emphasize the independence from team technical control.

Administrative controls for team quality members, such as time card approval, overtime approval, etc, are the responsibility of MPQAD supervision assigned to the team organization. A high level manager within MPQAD is specifically responsible for management and performance of the team quality personnel.

The actual inspections are conducted in accordance with PQCIs and IRs approved by MPQAD.

The above controls assure independence of the team quality representatives from the standpoint of location, organization, procedures.

QUESTION A4

"4. A description of the training that will be provided to all personnel including craftpersons. Concerning QC inspector recertification training, describe the actions you have recently taken to address the adequacy of the review of PQCIs prior to training being initiated on the PQCIs. In addition, describe the steps you have taken to ensure that all questions raised during PQCI training sessions will be resolved prior to certification to affected PQCI's."

RESPONSE

Training Of Construction Personnel

The existing construction training procedure (FPG-2.000) is under revision to incorporate the training requirements of the CCP. The procedure sets down specific requirements for type of training and subject matter for each organization element.

The team training will include the major elements described below:

A. General training will be provided in

1. Quality requirements for nuclear work
2. Requirements of the CCP
3. Safety orientation
4. Inspection and work procedures

Training in Items (1) through (3) and selected parts of (4) will be conducted in a formal setting and will be given to all personnel including the craftpersons.

In addition, a "tool box" training session will be conducted periodically for the craftpersons by the foreman. The subject matter will be developed by the training coordinator, and will include information regarding quality issues across the job.

B. Training in the procedures used to govern the performance of work will be conducted for designated field engineering and support personnel as appropriate. In some cases the training will include the craft foreman.

Formal training will be conducted for identified procedures that define the control of the designated work process, procedures for control of special processes and requirements for inspection and acceptance of completed work.

C. Training in procedures for selected processes will be conducted for the craftpersons. This will consist of discussion and/or field

demonstrations for the selected process. A list of the selected procedures will be maintained by the Training Coordinator.

Training Of MPQAD Personnel

MPQAD initiated a program in late 1982 to retrain and recertify all Engineer/Constructor QCE's (Inspectors) to existing PQCIs. A significant number of QCE's have been recertified under this process. Early in 1983, MPQAD decided to terminate recertification of old PQCIs, except in selected cases; focus efforts on completing the review and revision of PQCIs; and then train and recertify to the new PQCI.

MPQAD current plans are to re-train and re-certify all inspectors to the revised PQCIs. As a part of this activity, the Project Quality Control Instructions (PQCI) are undergoing a complete review to assure:

Attributes required for the safety and reliability of specific components, systems and structures are identified for verification.

Accept/reject criteria are clearly identified.

Appropriate controls, methods, inspection and/or testing equipment are specified.

Requisite skill levels are required per ANSI N45.2.6 or SNT-TC-1A.

After the PQCIs are revised as necessary, Quality Control Engineers (Inspectors) are being trained and must pass a closed-book examination and a demonstration test to assure their proficiency in utilizing the new instruction. Upon successful completion, each inspector is being certified to perform inspections to those PQCIs in which he was trained.

The following actions are ongoing to maximize the effectiveness of recertification training:

Review PQCI Prior To Initiation Of Training

The adequacy of PQCIs prior to training is assured by the following programmatic requirements:

A. The PQCI evaluation effort is being conducted under the direction of MPQAD QA personnel. MPQAD Procedure E-3M was issued April 11, 1983 and establishes the responsibilities and requirements for the preparation, revision, and control of PQCIs by QA personnel.

   As part of the PQCI revision process, Project Engineering does a review of the PQCI to insure that attributes are identified for inspection according to specification requirements and that clarifications are made to specifications wherever necessary.

B. Whenever a PQCI is revised, the revision is evaluated to determine if a pilot run for testing the implementing capability of the PQCI is

required. If a pilot run is required, the PQCI is tested by a team from QA, QC and Training. Based on this pilot run, the PQCI may be further revised.

C. Once the PQCI is ready for issue, an effectivity date is established in conjunction with the Training Department.

1. For PQCIs on which training was not previously conducted, the training and certification process is then started.

2. For PQCIs on which training and/or certification was previously conducted, a determination is made as to the need for retraining or recertification. When a revised PQCI is issued, it is evaluated in accordance with established procedures to determine if retraining and recertification is required. Based on this evaluation, appropriate action is taken.

D. During the training process, student questions (see below) are monitored. Based on this, further revision to a PQCI may be initiated.

Resolution Of Questions Raised During PQCI Training Sessions

Steps taken to ensure all questions raised during PQCI training sessions are resolved prior to certification include:

A. The development of an MPQA Department "Statement of Training Policy." A copy of this Policy is attached.

B. The Policy Statement is handed out at the start of each class and reviewed with the trainees.

C. Statement 2 of the Policy deals with student questions. Instructors handle many questions as a routine part of a class. However, when an instructor is faced with questions he cannot answer, he makes note of them for subsequent resolution with the students.

D. When required, a QA Engineer, Project/Resident Engineer or other resource person is scheduled to participate as part of the class and answer questions raised by the students.

E. If there are unanswered questions at the end of the scheduled class time, an evaluation is made by the instructor as to whether training can nevertheless be considered complete and the examination given without jeopardizing the students opportunity to satisfactorily write the exam.

F. Even if the examination can be given, prior to answering questions, the questions are still tracked and answered prior to certification.

G. Trainees are encouraged to defer taking examinations or performance demonstrations if they feel they have received inadequate instruction.

MPQA DEPARTMENT STATEMENT OF TRAINING POLICY

It is the objective of the MPQAD Training Department to provide training that meets the needs of the trainees. To help meet these needs the following policies apply:

1. Personnel who are required to attend classroom training shall not be administered an examination without 100% classroom attendance. 100% attendance is defined as total classroom time less instructor excused absences for brief periods of time. A lesser percentage may be requested in writing by the trainees supervisor and approved by the appropriate Training Supervisor.

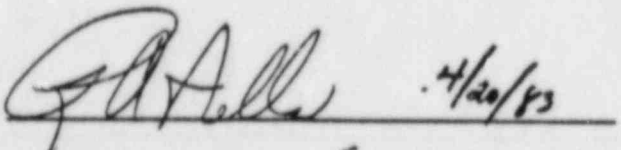
2. When trainees have pertinent questions that relate to the training subject matter the instructor shall take action to answer the questions or obtain the answers and provide them to the students prior to final examination or certification as appropriate.

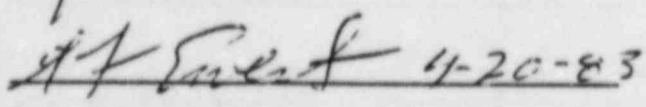
3. The time required for self-study prior to examination shall be determined and scheduled by the appropriate Training Coordinator, based on the duration of the lesson and complexity of the subject.

4. The instructor will review the class evaluation sheets or a composite to determine the acceptability of the training prior to administering the exam to the class. If judged unacceptable, the exam will not be administered until appropriate action has been taken.

5. When a trainee indicates that he is not prepared to take an examination or a performance demonstration he shall not be administered the examination or performance demonstration until his specific concerns are resolved.

STUDENT HANDOUT

RAWells  4/20/83

GFEwert  4-20-83

QUESTIONS A6, A7, AND A8

"6. A description of the controls you will use to ensure all problems have been identified during reinspection of a system or area prior to start of repair work or new work on that system or in that area."

"7. A description of the controls you will use to ensure that no new work will be performed that would cause a known nonconformance to be inaccessible."

"8. A description of your proposed program for in-process QC surveillance (inspection) of rework and new work."

RESPONSE

The process for release of work will be controlled by procedures that ensure that the requirements of the CCP are met prior to initiation of new work. The requirements for release of work include; checking, review and approval to ensure that verification and status assessment activities are completed and that the new work activity will not cover up (make inaccessible) items that have existing nonconformances. These procedures are identified in Figure 1. They define the overall process for identification and approval prior to release of work. These procedures require an identification of equipment or items that may be affected by the new work package and a check to see that there are no existing nonconformances or incomplete inspections on these items.

The interactions between project management, the installation team and the QA/QC organization are as follows. Initially, a list of Q items by area will be prepared by the installation team. The complete and inspected items will be provided to the QA/QC organization for the verification of completed work. The remaining items will be placed in an incomplete category and will be the basis for the status assessment by the completion team. The list will be updated as the verification and status assessment activities are carried out and will result in a complete list for each system/area.

The lists from all systems in an area will be combined and will form the basis for management review prior to release of the area for new work. The combined list will be used in the preparation of construction work packages (CWPs) for new work.

There are several major steps in the preparation and approval of the CWP. Each CWP will have a comparable Quality Work Plan (QWP) that defines the quality activities. Inspection hold points will be identified and included in the CWP. Following intitial preparation of the CWP, the package is taken by the team quality representative. The inspection hold points are reviewed and approved by the MPQAD organization and a QWP is initiated for this work activity. The QWP contains the inspection records that will be required for that work activity. A review will be performed to ensure existing nonconformances are not covered up. The review will be based on the steps in the three procedures listed in Figure 1. After the CWP is returned to construction, and the QWP is prepared, work can proceed.

FIGURE 1

Procedures For Controlling Release Of New Work

Procedure	Organization	Purpose
Area Release for Construction (FIG 7.500)	Construction	These three procedures together ensure proper completion of verification and status assessment activities prior to initiation of new work and ensure no cover-up of existing nonconformances
Construction Work Plans (FPG 7.300)	Construction	
Control, Release and Handling of Construction Work Plans and Quality Work Packages (N-17)	MPQAD	

QUESTION A9

"9. A description of the CPCo Management Review process for changes to CCP and how CPCo intends to keep the NRC informed of such changes."

RESPONSE

A procedure (MPPM-19) is being issued to control changes to the CCP. The procedure will provide that Q work activity will meet the requirements of the CCP or will receive management review and approval for any deviation from these requirements. The requirments that must be maintained for work activites under the CCP are:

A. Management reviews are scheduled and held of (1) activity planning for verification and status assessment and (2) results of status assessment and planning for new work activity.

B. A process is in place to ensure that no existing nonconformances will be covered up by new work activities.

C. Procedures to control work definition and release including definition of inspection requirements and hold points are in place.

D. Inspection and contruction personnel involved must have received all required training.

Any work activity that does not meet these conditions will be considered a change. A change will be reviewed by the Construction Implementation Overviewer. The NRC Region III management will be informed prior to implementation.

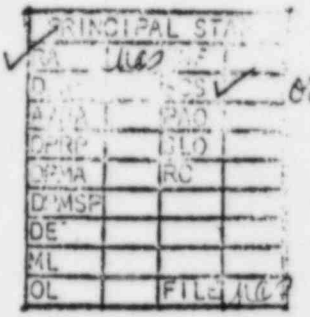
Consumers Power Company

James W Cook
Vice President - Projects, Engineering and Construction

General Offices: 1945 West Parnall Road, Jackson, MI 49201 • (517) 788-0453

April 6, 1983

letter only.



Mr J G Keppler, Administrator, Region III
Nuclear Regulatory Commission
799 Roosevelt Road
Glen Ellyn, IL 60137

MIDLAND NUCLEAR COGENERATION PLANT -
MIDLAND DOCKET NO's 50-329, 50-330 -
CONSTRUCTION COMPLETION PROGRAM THIRD PARTY OVERVIEW -
FILE 0655, B1.1.7 SERIAL 22268

REFERENCES 1. LETTER TO J W COOK DATED MARCH 28, 1983 FROM NRC REGION III REGARDING CONSTRUCTION COMPLETION PROGRAM

2. LETTER FROM J W COOK DATED MARCH 10, 1983 TO MR R C DEYOUNG REGARDING MIDLAND PROJECT RESPONSE TO NRC NOTICE OF VIOLATION EA83-3 DATED FEBRUARY 8, 1983

Your letter of March 28, 1983 regarding the Construction Completion Program (CCP) consisted of Parts A, B and C. The following is in partial reply to the referenced letter:

A. Items A1. through A9. will be addressed in a subsequent letter to you except for Item A5. for which our response is as follows:

Mr Keppler has asked that we develop measures that will ensure that our key hold points are honored and that critical parameters of our program are in place before proceeding to the next step. In order to ensure the Project's readiness to undertake the various steps in the CCP, the CCP includes provisions for management review at key points in the process. The review will examine plans for future implementation and ensure that programs and processes are thorough, complete, and correct. To provide the NRC with additional assurance that the CCP processes have, in fact, been and will be implemented as described in my January 10, 1983 letter, this letter, and the forthcoming response to Questions A1-A9 of Mr Keppler's March 28 letter, we will include in the duties of the third party construction overviewer responsibility for audits of our performance of these management reviews of the CCP process. We will not proceed with the CCP implementation beyond these points until the third party overviewer has documented their satisfaction with our readiness to proceed, including satisfaction with our initial response to any audit

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findings, in their weekly reports. This commitment will also assure that the CIO is in place in time to audit the management review of Phase I planning, and hence before any physical verification under Phase I takes place. (Note: The title of this particular third party overview is now being entitled Construction Implementation Overview, CIO).

The Company has or will provide information regarding all items which the NRC wished to review through the normal exchange of information with the NRC Staff. This information was provided through the response to the Notice of Violation regarding DGB inspection, through the forthcoming response to Questions A1-A9 of Mr Keppler's March 28 letter, and through daily interaction with the NRC Resident Inspector (the adoption of the QC organization within MPQAD and the resolution of the CP Co stop work order on Zack welding).

B. A more detailed description of the third party installation implementation overview (now titled CIO) is provided in the enclosed proposal (3 copies attached) from Stone and Webster (S&W).

1. The CIO will encompass all aspects of the CCP from the point that the CIO is mobilized onsite (including the process aspects discussed in A above and the reinspection work). The exception is that the CIO will not include an overview of the other third party evaluations being conducted as described in my letter to Region III dated January 10, 1983.

2. As defined on Page 2 of Section 2 of the S&W proposal, there will be weekly meetings with S&W, Consumers Power and the NRC and weekly minutes (reports) of these meetings will be issued. The protocol for communications between the parties will be the same as used by S&W on the soils remedial activities.

3. The CIO will continue until Consumers Power and the NRC have confidence in the adequacy of the Consumers Quality Assurance Program for the Midland Project.

C. Consumers Power Company proposes that Stone and Webster be the organization to perform the CIO. This is based on the fact that we consider S&W technically capable to perform the activities both in terms of the individual team proposed and in the corporate depth to support this effort. They are presently conducting what we believe is a highly professional overview of the soils remedial activities and have been found acceptable by the NRC for corporate independence. In addition, your letter indicated that it would not be acceptable for the CIO organization to also be involved with the IDV, thereby disqualifying the other evaluated bidder, Tera Corporation.

The proposal submitted by S&W addresses Items C1, 2 and 3 of your letter except that the statements provided in the attachment concerning corporate and personnel independence were inadvertently not notorized. This situation will be immediately corrected and the sworn statements of independence will be sent to you directly by S&W by approximately April 8, 1983.

Enclosure 1 to your letter of March 28, 1983 discussed protocol for IDV on the Aux Feedwater System, Electric Power System (diesel generator), and the HVAC system assuring control room habitability. This protocol will be adopted by asking Tera Corporation to prepare a detailed procedure implementing this protocol.

Based on the need to have the S&W team audit our pending initial management reviews, we have requested S&W to be able to mobilize their team as soon as possible. This is currently scheduled to occur the week of April 18, 1983. We plan to proceed at our risk unless instructed otherwise by your office. However, we would very much appreciate your expeditious review of S&W as a satisfactory contractor for the third party overview of the CCP.

James W. Cook

JWC/GSK/lc

CC Atomic Safety and Licensing Appeal Board (w/o att)
CBechhoefer (w/o att)
FPCowan, ASLB (w/o att)
JHarbour, ASLB (w/o att)
MMCherry (w/o att)
FSKelley (w/o att)
HRDenton, NRC (w/att)
WHMarshall (w/o att)
WDPaton, NRC (w/o att)
BStamiris (w/o att)
MSinclair (w/o att)
LLBishop (w/o att)

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PROPOSAL FOR THIRD PARTY CONSTRUCTION IMPLEMENTATION OVERVIEW MIDLAND NUCLEAR COGENERATION PLANT CONSUMERS' POWER COMPANY

April 1, 1983

Prepared by

STONE & WEBSTER

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STONE & WEBSTER

STONE & WEBSTER MICHIGAN, INC.

P.O. BOX 2325, BOSTON, MASSACHUSETTS 02107

April 1, 1983

Mr. J. W. Cook
Vice President
Midland Project, Engineering and Construction
Consumers Power Company
1945 West Parnell Road
Jackson, MI 49201

Dear Mr. Cook:

THIRD PARTY CONSTRUCTION IMPLEMENTATION OVERVIEW
MIDLAND NUCLEAR COGENERATION PLANT

Stone & Webster Michigan, Inc. (Stone & Webster) is pleased to provide this qualification document which describes Stone & Webster's capabilities for reviewing the Construction Completion Program at the Midland Nuclear Cogeneration Plant. The document consists of the following three sections:

Section 1 - Qualifications
Section 2 - Approach, Schedule, Organization, and Resumes
Section 3 - Demonstration of Independence, Signed Affidavits

Qualifications

Stone & Webster has been a leader in the development of nuclear power since participating in the effort that produced the first self-sustained nuclear chain reaction at the University of Chicago in 1942. Since that time, Stone & Webster has completed the engineering, design, and construction of over 20 nuclear units. Stone & Webster has also performed backfits, modifications, and support activities for many nuclear plants, including those designed and built by other Engineer-Constructors. In addition, Stone & Webster has served as a third party reviewer of the engineering, design, and construction work, of others. These reviews have been conducted for Babcock & Wilcox Company, Georgia Power Company, Houston Lighting & Power Company, New Brunswick Electric Power Commission, Pacific Gas & Electric Company, Power Authority of the State of New York, and Washington Public Power Supply System. Details of Stone & Webster's experience and capabilities for serving as a third party overviewer of nuclear power plant work, including resources available to support that effort, are contained in Section 1.

Approach, Schedule, Organization and Resumes

A site assessment team and senior overview committee will be used to identify and report findings regarding performance of the Construction

Completion Program. The site team will include an experienced Program Manager assisted by two functional leaders. One functional leader will be responsible for assessing the adequacy and completeness of procedures and inspection plans including quality assurance, quality control and installation work packages, and the other functional leader will be responsible for reviewing certain aspects of construction activities which relate to the performance of the Quality Control Inspection Program and installation activities. Each functional leader will be supported by qualified and experienced engineers and inspectors. Findings of the team will be submitted through the overview committee. Details of the approach and organization are contained in Section 2, along with a summary schedule and resumes of key individuals.

Demonstration of Independence

Stone & Webster will conduct the assessment of the Construction Completion Program in an independent manner. Stone & Webster has conducted an internal review of its records from January 1, 1978 to February 28, 1983, a period of five years, to demonstrate compliance with the specific independence of this program. Stone & Webster and its affiliated companies have performed an amount of work for Consumers Power Company (CPCo) since 1978 that represents only a very small portion of its business. Tasks that Stone & Webster has performed on the Midland Plant include assistance with spare parts and material management, evaluation of the emergency plan, enhancement of the operations integration plan, and third party review of soils remedial work. This role has not involved any direct engineering or construction work. Neither Stone & Webster, Inc. nor any of its subsidiaries own a beneficial interest in CPCo. Stone & Webster's Employee Savings Plan and Retirement Plan are administered by banks as trustees and the Retirement Plan holds no CPCo securities. Also, all key technical personnel who will be assigned to the project will be required to sign a disclosure statement as to any beneficial interest by them or their immediate family in CPCo, as to any involvement they may have had in the design and construction of the Midland plant, and as to any members of their immediate family working for CPCo. The signing of this disclosure statement will be a precondition to assignment to the project. Stone & Webster believes that the above demonstrates the independence of Stone & Webster's participation in the assessment of the Construction Completion Program. Demonstration of independence is more fully discussed in Section 3.

Stone & Webster's qualifications amply support the requirements for this task. If you have any questions or need additional information, please call me at (617) 589-5569 or Mr. C. F. Sundstrom at (617) 589-2780.

Very truly yours,

P. A. Wild
Vice President

cc GSKeeley-CPC
DBMiller-CPC

THIRD PARTY CONSTRUCTION IMPLEMENTATION OVERVIEW

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SECTION 1
QUALIFICATIONS

1.1 ASSESSMENT OF WORK OF OTHERS

Stone & Webster has been involved in the review of work being performed by other engineer-constructors on power plants in the engineering, design, and construction stage. The scope of these services includes design, schedule, and estimate reviews. The following are major examples of these projects.

Indian Point Unit No. 3

In 1974 at the request of the Power Authority of the State of New York (PASNY), Stone & Webster investigated the engineering, design, construction, permits, operations, quality assurance, scheduling, and environmental considerations in support of PASNY's purchase of the unit from Consolidated Edison Company of New York.

Using criteria set forth in the Final Safety Analysis Report (FSAR), AEC Safety Evaluation Reports, Technical Specifications, and the Environmental Report, Stone & Webster assessed the following:

1. The physical plant including Stone & Webster's opinions as to percent completion, operability, anticipated reliability, aspects of public safety, redundant features, and overall quality of work.

2. The ultimate successful operability of the facility, giving particular consideration to such areas as: permits and licenses required by government agencies; separation criteria; possible future retrofitted hardware; equipment support criteria for piping and cable trays; outstanding "apparent deficiency" items set forth in AEC/NRC records; operator training, availability and qualifications; interdependence with existing units at the Indian Point site; compliance with applicable codes; preoperational testing program status and adequacy; and external sources of power.

3. Estimated dates for fuel loading and operation supported by Stone & Webster's observations of construction completion, the status of procedures, and a preliminary operations progress network.

4. Comments and observations regarding existing nuclear fuel contracts. (A complete evaluation of the nuclear fuel contracts was the responsibility of PASNY.)

5. Quality assurance program adequacy and compliance thereto.

6. Facilities shared between units and an opinion on the degree of desirable separation.

7. An estimate of the cost to complete the total facility, to be verified upon receipt of supporting data from Arthur Young & Company and from PASNY.

Babcock & Wilcox

In April 1975, The Babcock & Wilcox Company (B&W), Lynchburg, Virginia, requested Stone & Webster to provide technical assistance for a design audit of its German subsidiary's (Babcock-Brown Boveri Reaktor GMBH - BBR) Muelheim-Kaerlich (M-K) project. The M-K plant uses a B&W 205 reactor plant and is owned by the German utility Reinisch-Westfaelisches Elektrizitaetswerk AG (RWE). The project was approximately two years into design with the first concrete pour scheduled for June 1975. Stone & Webster assembled a project team, prepared a schedule, and defined audit tasks.

The Stone & Webster project team was instructed to review designs exclusive of the nuclear steam supply system (NSSS) and the turbine plant. Priority was placed on items which could adversely affect the forthcoming concrete pours or the plant's constructibility, maintainability, or operability. Audits were conducted to identify problems. Areas which were determined to be over designed and excessive in construction costs were also identified.

Point Lepreau Generating Station

Stone & Webster has been operating in support of the New Brunswick Electric Power Commission at the Point Lepreau Generating Station. A team has reviewed the Commission's compliance to applicable Canadian Standards, evaluated completed and open work items and assisted in upgrading of systems and procedures and completion of work necessary to bring the station to commercial operation. Stone & Webster provided engineering support to the Commission for the preparation of operating licenuse documents for submittal to the AECB. Stone & Webster provided Quality Assurance support in developing and implementing a Quality Assurance Program during pre-operational testing and startup. Implementation of this program involved field inspections, validation of test proceedings and audits of test and startup activities.

Washington Public Power Supply System (WPPSS)

Stone & Webster was engaged by WPPSS to assess the accuracy of the 1980 revised estimates for five nuclear power plants under construction. This assessment, including the review of schedules, cost estimates, progress to date, and remaining work to complete the review, culminated in both oral and written reports to the WPPSS Board of Directors.

Vogtle Nuclear Generating Station

Stone & Webster was engaged by Georgia Power Company to conduct an independent review of the Vogtle Plant construction schedule. This review included an assessment of the construction sequence, scheduling and duration of the schedule based on Stone & Webster's experience in

nuclear plant construction. Stone & Webster also recommended innovative construction methods which might shorten the overall schedule.

Astoria Generating Station - Unit No. 6.

An investigation similar to that described above for Indian Point 3 was also conducted at Astoria 6 (825 MW, oil fired), then about 50 percent complete, in support of PASNY's purchase of that unit from Consolidated Edison. Subsequent to the investigation, Stone & Webster was retained for construction management responsibility and completed the unit.

South Texas Project

Stone & Webster has completed an estimate evaluation of the South Texas Project for the Houston Lighting and Power Company. The work included a slippage analysis of cost and scheduling in response to questions raised by the Texas Public Service Commission.

Diablo Canyon - Unit No. 1

Stone & Webster is assisting TELEDYNE in the design verification of the Diablo Canyon Nuclear Power Station for Pacific Gas and Electric Company. Stone & Webster Quality Assurance personnel performed extensive evaluation of selected physical installations and contractor quality programs to support this activity. Stone & Webster in performing this function was acting as independent reviewer/verifier of previously conducted work.

1.2 NUCLEAR PLANT DESIGN AND CONSTRUCTION EXPERIENCE

Stone & Webster has been a leader in the development of nuclear power since its participation in the effort which resulted in initiating the first self-sustaining nuclear chain reaction at the University of Chicago in 1942. The Corporation's experience covers projects ranging from nuclear research facilities to heavy and light water-moderated and gas-cooled nuclear power plants.

Stone & Webster assisted in the design of the first commercial-scale nuclear power plant in the United States at Shippingport, Pennsylvania, and later completed such pioneering projects as the Army Package Power Reactor, the Yankee Nuclear Power Station at Rowe, Massachusetts, and the Carolinas Virginia Prototype Nuclear Power Plant at Parr Shoals, South Carolina.

For the Carolinas Virginia Plant, Stone & Webster performed engineering and construction inspection for the only commercial heavy water-moderated pressure tube reactor to be constructed in the United States. This demonstration plant had a net electrical output of 17,000 kW and generated over 200 million kilowatt hours before plant retirement in 1967. For this plant, Stone & Webster conceived and designed a reinforced concrete containment now in common use on nuclear plants.

Since 1968, nine large nuclear generating units have been designed, constructed, and placed in operation by Stone & Webster.

S&W is currently engaged in activities in support of approximately 50 nuclear units. S&W designed, engineered and/or constructed 10 of these units, which have reactors furnished by four U.S. reactor manufacturers - pressurized water by Babcock & Wilcox Company, Combustion Engineering, Inc., and Westinghouse Electric Corporation, and boiling water by General Electric Company, for a total capacity in excess of 8,000 MW. In addition, S&W is conducting work on five nuclear units in varying stages of engineering, design and construction totaling over 4,000 MW of capacity. These include: Millstone 3, Beaver Valley 2, Shoreham, Nine Mile 2, and River Bend 1 as listed in Table 1-1.

In May 1976, Stone & Webster was the first engineer-constructor to have its standard (reference) nuclear power plant design approved by the NRC. This reference plant uses the Westinghouse 1,300 MWe RESAR-41 reactor. Since then, the NRC has issued preliminary design approvals for a Stone & Webster reference plant that uses the 1,300 MWe CESSAR-80 reactor of Combustion Engineering, Inc. Application for a reference plant using 1,300 MWe BSAR-205 reactor of Babcock & Wilcox has been submitted to the NRC.

NUCLEAR POWER PROJECTS

Power Authority of the State of New York - James A. FitzPatrick Nuclear Power Plant

The Power Authority of the State of New York selected Stone & Webster to provide design and supervision of construction of its 821 MW James A. FitzPatrick Nuclear Power Plant, located at Nine Mile Point, near Oswego, New York. The plant employs a boiling water reactor and commenced operation in 1975.

Niagara Mohawk Power Corporation - Nine Mile Unit 1 and 2

Stone & Webster was constructor for the 610 MW Unit 1 General Electric boiling water reactor plant. Construction began in 1965 and the station began commercial operation in 1969. Stone & Webster was selected to perform engineering, design, and construction management of Unit 2, also a General Electric boiling water reactor plant. Construction of the 1,100 MW station began in 1975 and commercial operation is scheduled for 1986.

Northeast Utilities Service Company - Millstone Point - Unit 3

Stone & Webster was selected as Engineer and Constructor of this 1,100 MW nuclear unit at the Millstone Point site on Long Island Sound. The unit utilizes a four-loop Westinghouse pressurized water reactor with a General Electric turbine. The once-through cooling system uses water from Long Island Sound. A construction permit was received in 1974 and commercial operation is scheduled for 1986.

Duquesne Light Company - Beaver Valley Units 1 and 2

Stone & Webster was retained by Duquesne Light Company as Engineer-Constructor for the 883 MW Unit 1 of its nuclear power plant at

Shippingport, Pennsylvania. Stone & Webster is also providing engineering and construction for the 883 MW Unit 2. Unit 1 was placed in operation in 1976. Both units have natural-draft cooling towers for their circulating water systems.

Long Island Lighting Company - Shoreham Power Station - Unit 1

Long Island Lighting Company selected Stone & Webster as Engineers and Construction Managers for Shoreham Power Station - Unit 1. During preliminary engineering, the unit size was increased from 540 MW to 820 MW. Intervenors' objections delayed receipt of the construction permit for this unit until April 1973. An underwater diffuser has been designed for the circulating water discharge to minimize thermal impact on Long Island Sound.

Virginia Electric and Power Company - Surry Units 1 and 2

Stone & Webster was the Engineer-Constructor for two 819 MW pressurized water nuclear units located in Surry, Virginia. The first unit was placed in operation in 1972 and the second in 1973.

Virginia Electric and Power Company - North Anna Units 1, and 2

VEPCO retained Stone & Webster as Engineer-Constructor for two 938 MW pressurized water nuclear units to be located on Lake Anna in Louisa County, Virginia. The reactors for Units 1 and 2 are provided by Westinghouse. Construction permits for these units were issued in 1971. Unit 1 was placed in operation in 1978 and Unit 2 in 1980.

Two additional PWR Units 3 and 4 by Babcock & Wilcox received construction permits in 1974. Work on these units was halted and the units were canceled.

Lake Anna was created by damming the North Anna River to form a large cooling reservoir. This man-made lake over 17 miles long with over 200 miles of shoreline is now a major recreational attraction. Provisions were made for flood control and flow control of the North Anna River.

Gulf States Utilities Company - River Bend Units 1 and 2

Stone & Webster is Engineer-Constructor for two 900 MW BWR nuclear units to be located North of Baton Rouge, Louisiana. A construction permit was received in 1975.

Maine Yankee Atomic Power Station

Stone & Webster was the Engineer-Constructor for the 825 MW Maine Yankee Atomic Power Station located at Wiscasset, Maine, the largest operating nuclear power plant in New England. The plant uses a Combustion Engineering pressurized water reactor and was placed in operation in 1972.

New York State Electric & Gas Corporation - Units 1 and 2

Stone & Webster was engaged by New York State Electric & Gas Corporation (NYSE&G) to engineer, design, and construct a two-unit reference nuclear power station. This utility was the first in the nation to choose a plant with all of its principal design features preapproved by the Nuclear Regulatory Commission. The twin 1,250 MW units were to be jointly owned by NYSE&G and Long Island Lighting Company. Commercial operation was scheduled for 1991 for Unit 1 and 1993 for Unit 2. The PSAR, ER and State PSC applications had been submitted in 1979 when work was stopped due to problems with state permits.

Nuclear Italiana Reattori Avanzati (NIRA) - CIRENE-Latina Prototype Plant

NIRA selected Stone & Webster to provide engineering services and consulting in design and construction of the CIRENE prototype plant. The plant, which is fueled with natural uranium moderated with heavy water and cooled with light water, has an electric power output of 40 MW. Stone & Webster assistance includes design review, stress analysis and pipe support design of the piping systems within the containment, design of radioactive waste system, conceptual design of the radioactive waste building, and review of specifications and procedures.

Project Management Corporation - Demonstration Liquid Metal Fast Breeder Reactor Plant

Late in 1975, Stone & Webster was selected by Project Management Corporation (PMC) to act as general construction contractor for the nation's first large-scale Demonstration Liquid Metal Fast Breeder Reactor Plant. Project Management Corporation was organized by the utility industry in 1972 to build and operate the LMFBR plant. In May 1976, management control of the Clinch River Breeder Reactor Plant (CRBRP) Project was transferred from PMC to the U.S. Department of Energy (formerly ERDA) in recognition of the Government's larger financial commitment.

The plant will be located on the Clinch River at Oak Ridge, Tennessee. The selection of Stone & Webster from a field of eleven competitors was significant since construction of the plant will be complex and the quality control requirements demanding.

San Diego Gas & Electric Company - Sundesert Nuclear Station

San Diego Gas & Electric Company selected Stone & Webster early in 1975 to design and construct two nuclear units of 975 MW capacity each at its Sundesert Nuclear Station. Each unit was designed for high seismic conditions using an innovative containment mat design to reduce requirements for excessive pipe/equipment seismic restraints. Additionally, due to lack of adequate water supply at the desert site, unique station makeup water treatment systems using agricultural waste water were designed and proven through pilot plant operation. Correspondingly, the station was also designed for zero liquid discharge from the site.

In 1978, San Diego Gas & Electric Company canceled further effort on the project pending satisfactory resolution of several bills passed by the California legislature which inhibited further nuclear power plant construction in the state.

General Public Utilities Service Corporation - Forked River Nuclear Generating Station

Stone & Webster was selected to provide construction management services for the two-loop, 1,120 MWe Combustion Engineering pressurized water nuclear power plant. This unit was subsequently canceled.

Long Island Lighting Company - Jamesport Units 1 and 2

Stone & Webster was selected by Long Island Lighting Company to provide engineering, design, and quality assurance services and to assist LILCO in the construction management of Jamesport Nuclear Power Station - Units 1 and 2. The unit was subsequently canceled.

General Atomic Company/Gas Cooled Reactor Associates

In the late 1960s, Stone & Webster was chosen to prepare several HTGR nuclear plant designs and cost evaluations for General Atomic. In 1968, a Balance-of-Plant design for a 1,000 MWe HTGR was completed. In the latter half of 1969, a Balance-of-Plant design for a 1,100 MWe HTGR unit, updating the original design, was completed and the competitive cost position of the HTGR versus those of other types of reactors was determined. Stone & Webster personnel are providing engineering support services on future HTGR development on a continuing basis for General Atomic Company and Gas Cooled Reactor Associates.

Water Reactor Design Studies

In addition to the work for utilities, reports and proposals for the Atomic Energy Commission (now the NRC) have been prepared by Stone & Webster. These included a 250 MW Advanced Pressurized Water Reactor Study, completed jointly with Combustion Engineering in 1959; a 400 MW Spectral Shift Control Reactor Study, completed jointly with Babcock & Wilcox in 1961; and a 1,000 MW Pressurized Water Reactor Study, completed jointly with Westinghouse in 1963. Conceptual designs were prepared for Allis-Chalmers for several boiling water reactors.

SPECIAL TECHNICAL CAPABILITIES

Licensing Experience with NRC

Stone & Webster has prepared Safety Analysis Reports, as well as Environmental Reports, for submission to the Atomic Energy Commission (now the NRC) as part of license applications. This work has included coordinating the preparation of the entire project with the owner and manufacturer, the preparation of technical sections, and final editing and reproduction.

In addition, Stone & Webster has prepared technical specifications for operating license applications. These specifications cover, in detail, plant system descriptions, equipment descriptions, operating parameters, general maintenance and operating instructions, and other special safety and engineering features.

During hearings on both construction permit and operating license applications, Stone & Webster personnel have assisted clients by providing information and expert testimony on siting, containment, foundation and structural design (especially related to earthquake analysis and design), engineered safeguards, auxiliary systems, and radioactive waste disposal.

Continual contacts with regulatory agencies are maintained to explore the acceptability of new nuclear concepts of safety and reliability and alleviate licensing concerns.

Radiological Emergency Response Planning

Stone & Webster's Radiological Emergency Response Planning Group has extensive experience in the field of radiological emergency response planning (RERP). To address the current regulatory requirements concerning emergency planning, Stone & Webster maintains a multi-disciplined staff of management, engineering, scientific, and planning personnel with demonstrated expertise in emergency plan development and implementation, radiation monitoring, meteorological assessment, communications, accident assessment, evacuability determination, personnel accountability, plan exercise and evaluation, personnel training, public prompt notificiation systems, and federal regulatory liaison. Stone & Webster staff activities include the review of emergency planning activities (state, county, local, and utility) with the Nuclear Regulatory Commission (NRC) and the Federal Emergency Management Agency (FEMA). This provides the necessary background to ensure that plans are responsive to NRC/FEMA requirements. Stone & Webster has also analyzed the potential radiological consequences of postulated accidents for Environmental Report (ER) and Safety Analysis Report (SAR) submittals. In addition, Stone & Webster has developed corresponding detailed emergency plan implementing procedures for state and local government agencies.

Stone & Webster maintains a complete library of work aids (e.g., generic plans for addressing the requirements of NUREG-0654, generic Emergency Plan Implementation Procedures, incident report messages, responsibility matrices, questionnaires, prepared public announcements, and detailed response procedures/checklists) that have proven to be an invaluable time saver in the developmental phase of a RERP. Through modification of these work aids, site-specific information is obtained by Stone & Webster's staff, organized in the desired format, and presented along with detailed implementing procedures as a comprehensive RERP.

Containment Design

Evolution

Stone & Webster designed a spherical steel shell for the Yankee Nuclear Power Station containment at Rowe, Massachusetts. The use of a steel-lined concrete structure which would serve as shielding as well as containment was used on the Carolinas Virginia Test Reactor (CVTR). Success of the CVTR containment was the basis for the choice of containment in Stone & Webster's design for the Connecticut Yankee plant at Haddam, Connecticut. This 135 ft diameter cylindrical structure with a hemispherical dome serves the three-fold purpose of housing, containing, and shielding the reactor. A further advance at Connecticut Yankee was the use of engineered safeguards required to meet AEC siting criteria. These facilities include a containment spray system and an internal air recirculation and filter system.

Subatmospheric Containment

In designing the Surry Power Station for Virginia Electric and Power Company, SWEC refined the Connecticut Yankee design developing a system called Subatmospheric Containment. During normal operation, the containment atmosphere is kept at about 9.5 psi absolute pressure. This arrangement lowers the peak accident pressure for a given containment volume, lowers containment cost, and allows the subsequent return to subatmospheric pressure within a short period of time.

Containment for Boiling Water Reactor Plants

A concrete pressure suppression containment (Mark II) was developed for the boiling water reactors at Shoreham Nuclear Power Plant of Long Island Lighting Company and at Nine Mile Point Unit 2 of Niagara Mohawk Power Corporation. In this containment design, the conically shaped vapor barrier and strength member are constructed and function as a unit for a boiling water reactor plant.

For subsequent projects, Stone & Webster participated with General Electric Company in the design of the Mark III concept which includes a secondary containment structure and cylindrical concrete dry well and suppression pool. These are surrounded by a concrete missile shield wall and roof.

Containment Computer Program

Stone & Webster has developed digital computer programs to determine containment structure design parameters (design temperature, pressure, and size) and to evaluate the performance of engineered safeguards, following a loss-of-coolant accident. In these programs, the containment and safeguard systems are optimized by studying combinations of variables, such as coolant blowdown, heat sources and sinks, metal-water reactions, and static and dynamic engineered safeguards (particle filters, fans, sprays, and safety relief). These programs provide an

analytical tool for nuclear safety analysis. Other programs are available for earthquake analyses, finite difference analyses for shell structures, tornado wind analyses, and high energy impact studies.

Nuclear Engineering

Stone & Webster Nuclear Technology Division provides technical services required for analysis, design, and other tasks usually referred to as Nuclear Engineering. These involve nuclear safety systems, radiological engineering, radiological safety, nuclear fuels, nuclear wastes, and emergency response planning.

Radiation Protection

Stone & Webster Radiation Protection Group is responsible for the radiation shielding, protection against radioactive effluent release, and accident dose calculations. This group designs shielding against fission products, activated crud, and N-16 activity in process streams. In 1974, the Nuclear Regulatory Commission, in Regulatory Standard Review Plan 12.3, cited the Stone & Webster topical report RP-8, "Radiation Shielding Design and Analysis Approach for Light Water Reactor Power Plants," as a guide in determining acceptability of shielding designs being reviewed. In its evaluation, the NRC concluded that "the topical report RP-8 is an important contribution in the field of radiation shielding design."

The Radiation Protection Group also calculates the dosage required to demonstrate the acceptability of the site/engineered safety features combination under postulated accident conditions and calculates doses from normal effluent releases to individuals at the site and to the surrounding population.

In addition, the group develops the requirements and provides the procurement specifications for equipment to monitor area, airborne activity, process, and effluent radiation.

An extensive set of computer programs has been developed for this work. These programs can calculate: the activity of a mixture of radioisotopes after various periods of buildup and decay in the reactor core, reactor coolant, and auxiliary system components; the radiation shielding for any array of point line and volume sources; and the radiation levels in the primary and secondary containments, in the control room at the site boundary, and at the low population zone boundary after postulated accidents for both water and gas-cooled reactors.

Radioactive Waste Disposal

SEWC is experienced in the areas of liquid, gaseous, and solid radioactive waste systems, boron recovery systems, and reactor cavity and fuel pool purification systems.

Stone & Webster has continuously refined its designs to provide systems that reclaim coolant and soluble poisons, facilitate the safe disposal of radioactive waste materials, and minimize operating expenses in these

areas. Typical of this development effort are low pressure cascade-type waste gas handling and disposal systems, waste gas recombiner systems, and a two-stage liquid-treating evaporator complex to reclaim or dispose of soluble poisons or coolant.

Nuclear Auxiliary Systems

The nuclear plant has many systems which support the reactor and the primary heat transfer system. Stone & Webster has developed detailed designs for the following systems through three generations of nuclear plants:

Spent Fuel Pool Cooling and Purification
Waste Treatment and Disposal
Charging and Volume Control
Residual Heat Removal
Chemical Treating
Auxiliary Cooling
Coolant Makeup
Containment
Purification
Sampling
Leakage Rate Testing
Ventilation
Purging

Basic Services for Nuclear Auxiliary Systems

Instrument and Service Air
Vents and Drains
Service Water

Engineered Safeguards

Containment Air Recirculation and Filtration
Containment Spray Cooling
Core Deluge or Spray
Safety Injection

The design effort required for the above systems includes basic process work, preparation of engineering flow diagrams, system process calculations, equipment sizing, preparation of system descriptions, equipment and piping layout, physical arrangement of equipment within buildings, and the preparation of detailed purchase specifications for all equipment, piping, valves, instrumentation, and controls in accordance with the applicable ASME codes.

Engineering Mechanics

In all nuclear power plants, special mechanical devices are needed which are not readily available on the open market. Among these are fuel handling devices and special equipment supports.

The reactor containment presents challenges in connection with the design of liners, penetrations, and hatches. Stone & Webster has a division of engineers with extensive experience in this specialized area of mechanical analysis and design. They are responsible for the detailed design and stress analysis of piping and supports, steam generator supports, steel containment vessels, steel liners for reinforced concrete containers and vessels, large equipment and personnel hatches, and other related reactor plant equipment. Their work encompasses the preparation of specifications, the selection of fabricators, assistance to suppliers in the solution of fabrication problems, and assistance in supervising field erection.

The Pipe Stress Analysis and Support Section within the Engineering Mechanics Division provides a broad spectrum of services in the area of pipe stress analysis and pipe support design, in accordance with applicable Codes, Regulatory Guides and Client Specifications. In addition to basic design and analysis, these services consist of staffing with qualified personnel, development of technical criteria, providing analytical tools, such as in-house computer facilities and codes, and preparation of calculations which demonstrate system/component acceptability to specified requirements. The Section also provides services related to fabrication, procurement, installation and as-built inspection of piping systems, components and supports.

Seismic Engineering

An extensive background in the field of seismic engineering has been developed by Stone & Webster engineers. This experience was generated through the design and construction of nuclear power plants, fossil-fueled power stations, hydroelectric facilities, and industrial plants. Earthquake engineers have also made a substantial contribution to the industry through membership on technical committees and publication of many technical papers on seismic engineering.

Engineering Models

Scale models have been prepared for many of Stone & Webster's major nuclear projects. The models have been very useful in the engineering, design, and construction of plants. They also serve as additional checks against piping and equipment interferences and, in the field, aid construction planning and coordination.

The models are also useful in operator training and in describing how maintenance and movement of heavy equipment can be accomplished.

Construction sequence models have been utilized to verify the benefits of modularized structural and mechanical subsystems.

Quality Assurance and Control

The Stone & Webster Nuclear Quality Assurance effort is guided by a comprehensive and flexible procedural system based upon the Stone & Webster Standard Nuclear Quality Assurance Program (SWSQAP 1-74A). This standard program reflects years of field experience, and was the first

A/E standard quality assurance program approved by the Nuclear Regulatory Commission. The program is derived from the management principles outlined in 10CFR50, Appendix B, and is responsive to basic regulatory requirements. It covers quality assurance activities connected with all phases of engineering, construction and testing of nuclear facilities including conceptual and final design, procurement, construction, inspection and testing.

Stone & Webster maintains programs meeting the requirements of the ASME Boiler and Pressure Vessel Code, Section III, Divisions 1 and 2. Stone & Webster currently holds ASME Corporate Certificates as a Constructor (N), Installer (NA), and Fabricator (NPT). Stone & Webster also holds a Nuclear Repair (NR) Certificate granted by the National Board of Boiler and Pressure Vessel Inspectors.

Field Quality Control

Field Quality Control support includes full site inspection services covering all aspects of the field quality program. Support to all field operations is provided by Division Headquarters located in Boston with each site assigned a Senior Site Representative for Field Quality Control and staffed with qualified Engineers and Inspectors. Areas of inspection expertise include all major engineering disciplines plus non-destructive examination techniques, calibration and control of measuring and test equipment, welder qualification and the establishment and operation of various test laboratories such as soils or civil/structural.

Procurement Quality Assurance

Procurement quality assurance services includes seven District Offices located across the United States, three Operations Centers, and three international locations, to effectively monitor the quality of materials, components, and equipment supplied by manufacturers. Procurement QA inspectors are supported by the Boston Headquarters staff which administers and performs the functions of procurement inspection planning, seller qualification and evaluation, and seller documentation review. Further, the staff coordinates the overall efforts of all Procurement Quality Assurance (PQA) locations to ensure consistent compliance with all licensing requirements and applicable regulations.

Quality Engineering

The Stone & Webster quality effort is based upon an established system of administrative and technical programs and procedures. Quality Engineering provides the needed technical assistance and systems support for further development and implementation of this system. Quality Engineering specialists are assigned to all locations within the Quality Assurance organization and to specific projects, as necessary.

Specific functions performed within the Quality Engineering discipline are: developing controlled QA/QC administrative and operational procedures; review and approval of technical documents such as master and project specifications; analyzing quality data and reporting trends to management; developing inspection plans; maintaining expertise in the

quality assurance requirements of codes and standards such as ASME, ANSI, etc., and providing QA Department positions and guidance upon request; providing training for the qualification and certification of auditors, examiners and inspectors.

Inspections conducted on a sampling basis are performed to valid statistical plans, when appropriate, prepared by experienced specialist engineers.

In addition to these activities, Stone & Webster Quality Engineering also provides technical expertise and assistance in the specialized field of Nondestructive Examination and Testing (NDE and NDT). Specifically, this effort may include pre-award evaluation of NDT facilities, evaluation of seller/subcontractor NDT capabilities, audit support, technical interpretation and training for certification of inspectors. NDE engineering, laboratory services and training support is provided to procurement and field operations.

Quality Evaluations

Audits and evaluations are conducted to monitor the performance and effectiveness of the quality program and report results to management. Auditors are qualified to ANSI standards and capable of auditing the quality aspects of industrial, fossil, and nuclear projects. Audits are performed in accordance with the detailed audit plans. A thorough review of applicable codes and standards and project commitments prior to the development of such plans ensures evaluation of program effectiveness and implementation.

Qualification and Training

Quality Assurance Engineers and Inspectors are trained and qualified in accordance with standards endorsed by the American National Standards Institute (ANSI). Inspectors are certified in accordance with the requirements of ANSI N45.2.6 "Qualification of Nuclear Power Plant Inspection Examination and Testing Personnel." Personnel performing or evaluating NDT are trained and certified by the Nondestructive Test Division to SNT-TC-1A in the techniques of Ultrasonic, Liquid Penetrant, Magnetic Particle, Eddy Current, Radiographic Testing and Leak Testing. QA Engineers conducting pre-award surveys and post-award audits are trained and qualified in accordance with ANSI N45.2.23.

In addition to the specialized training involved in certification, the Quality Assurance Department provides indoctrination and continuing education of all Stone & Webster personnel performing activities affecting quality. Typical training topics include procedural system requirements, auditing, general inspection techniques, codes and standards, and administrative practices. Engineering Assurance also provides corporate training Engineering Department policies and procedures and related engineering management systems to ensure a proper understanding of intent and application.

1.3 SUPPORT OF OPERATING PLANTS

Stone & Webster has been engaged in performing backfits, modifications, and support activities to many operating nuclear plants, both those designed by Stone & Webster and those designed by other Engineer-Constructors. Table 1-2 is a partial listing of operating nuclear plants for which Stone & Webster has provided such services. The following are operating nuclear plants designed by other Engineer-Constructors firms for which Stone & Webster has provided these services:

Pilgrim 1
Point Beach 1 and 2
Fort St. Vrain
Cooper
Salem 1
Indian Point 3
Oyster Creek
Vermont Yankee
Zion
Ft. Calhoun
Millstone 1 and 2
Prairie Island
Monticello.

Table 1-3 lists some of the backfits, modifications, and support activities that have been performed by Stone & Webster.

1.4 CORPORATE RESOURCES

Staffing and Personnel Resources

Support personnel will be assigned from appropriate divisions within Stone & Webster to assist those individuals assigned to the review effort for the Construction Completion Program. The resource pool available to complete the required staffing includes over 5,500 engineers and designers out of a total technical staff of approximately 10,000.

WASHINGTON OFFICE

The Stone & Webster organization includes a Washington, D.C. office. Its primary function is to provide support services across the full spectrum of corporate programs as they relate to federal government activities. The professional staff in the office has expertise in the executive, legislative, and regulatory activities of the federal government. This experience and expertise is used on a continuous basis to establish and maintain liaison with pertinent federal agencies and staff, and to develop current, accurate information for all corporate offices.

FACILITIES

Stone & Webster's Headquarters and principal operations facility is located near the center of Boston's business district. This location allows ready access to all rail, subway, and ground transportation, and is within a 10-minute cab ride to Boston's Logan Airport.

Stone & Webster also maintains fully staffed and functioning engineering centers in New York City; Cherry Hill, New Jersey; Denver, Colorado; and Houston, Texas. These centers have facilities for total project handling. Computer, telecopier, and other ties between Headquarters and these centers provide the rapid communication necessary to Stone & Webster's operations.

COMPUTER FACILITIES

The computer center has an IBM 3033 MP system with 16 million bytes of storage and an IBM 3033 UP. In order to provide the most economical services possible to clients, this computer system is tied to an established electronic communication network in Boston, New York, Denver, Cherry Hill, Houston, London, Toronto, and Paris and Stone & Webster's various construction sites. These capabilities provide rapid, world-wide information transfer.

MATERIALS AND MATERIALS PROCESSING LABORATORY

Stone & Webster's Materials Engineering Division maintains a laboratory to provide services for projects, clients, and/or other Stone & Webster organizations.

The following services are available in this laboratory:

- Metallographic
- Material Processing
- Corrosion and Chemistry
- Nondestructive Testing
- Protective Coatings

ACOUSTICS AND VIBRATION LABORATORY

Stone & Webster maintains an advanced Acoustics and Vibration Laboratory containing field portable instrumentation which offers multiple channel signal recording and dual channel real time narrow band frequency analysis capabilities. A full complement of transducers are available including: accelerometers, seismic velocity pickups, noncontact proximiter probes, load cell, optical shaft position and speed pickup, condenser microphones, and dynamic pressure. A complete data acquisition and analysis system can be quickly and efficiently set up so that data are analyzed at the time of the measurements to identify the problem quickly and minimize any disruption of normal operations. Computer modeling using advanced finite element programs developed by Stone & Webster is available to evaluate structural, foundation, or equipment changes to reduce vibration.

GEOTECHNICAL LABORATORY

An integral part of Stone & Webster's Geotechnical Division is a physical testing laboratory located in the basement of the Headquarters building. The Geotechnical Laboratory is a 3,000-square ft. area subdivided into compartments devoted to temperature, humidity, and dust control. This complete testing capability within the Geotechnical Division permits

samples to be selected, test programs formulated, and test results reported with a minimum loss of time and a maximum understanding of the objectives and the results of the testing.

TECHNICAL INFORMATION CENTER

Stone & Webster provides its employees with appropriate resources for keeping abreast of relevant technological and management techniques. This Center is an active participant in the Special Libraries Association.

Stone & Webster is also a member of the MIT Industrial Liaison Program. Reports and papers published by MIT may be acquired at no charge through the Center.

The Center can also perform computer searches in any subject area through the Department of Energy RECON, the Defense Documentation Center, System Development Corporation ORBIT, and Lockheed DIALOG. Foreign data bases can also be tapped as a resource. All searches are performed by trained Center personnel. Access is quick and accurate with documentation always presented in bibliographic format.

CONTINUING EDUCATION DEPARTMENT

The Continuing Education Department (CED) of Stone & Webster provides professional educational services that are designed to serve the businesses in which Stone & Webster and its clients are engaged. They include managerial, technical, and business programs designed for career development and personal growth for professionals. Approximately 400 Stone & Webster educational courses are currently available. Ninety-five (95) of these courses address Quality Assurance activities and 173 provide instruction in construction skills. CED also designs a tailor-made, technical skills development program, such as a program for instrumentation specialists.

COMPUTER GRAPHICS

Stone & Webster has developed, over the past five years, an interactive graphics computer system which is one of the most advanced systems available today. Using specialized software, the system integrates the development of a drawing from the first design idea to the finished product.

TABLE 1-1

STONE & WEBSTER ENGINEERING CORPORATION
REPRESENTATIVE NUCLEAR POWER PROJECTS

Completion	Client & Location	Project/Station	MW	Type and Mfr.	Services Provided
1957	Alco Products Incorporated (AEC/U.S. Army)	Army Package Power Reactor	2.5		Engineering and Construction
1957	Westinghouse Electric Corporation/Duquesne Light Company	Shippingport	90	PWR-W	Architect-Engineer for Nuclear Plant
1960	Yankee Atomic Electric Company	Yankee-Nuclear Power Station	185	PWR-W	Engineering and Construction
1963	Carolinas Virginia Nuclear Power Associates, Inc.	Prototype Nuclear	17	PWR-W	Engineering, Design, and Construction Liaison
1968	Connecticut Yankee Atomic Power Company	Connecticut Yankee Atomic Power Plant	600	PWR-W	Engineering, Construction and Quality Assurance
1969	Niagara Mohawk Power Corporation	Nine Mile Point Unit No. 1	590	BWR-GE	Management of Construction and Quality Assurance
1972	Virginia Electric and Power Company	Surry Power Station No. 1	819	PWR-W	Engineering, Construction and Quality Assurance
1972	Maine Yankee Atomic Power Company	Maine Yankee Atomic Power Station	825	PWR-CE	Engineering, Construction and Quality Assurance
1973	Virginia Electric and Power Company	Surry Power Station No. 2	819	PWR-W	Engineering and Construction
1975	Power Authority of the State of N.Y.	James A. FitzPatrick	821	BWR-GE	Engineering, Construction Management and Quality Assurance

TABLE 1-1 (CONT'D)

STONE & WEBSTER ENGINEERING CORPORATION
REPRESENTATIVE NUCLEAR POWER PROJECTS

Completion	Client & Location	Project/Station	MW	Type and Mfr.	Services Provided
1976	Duquesne Light Company	Beaver Valley 1	883	PWR-W	Engineering, Construction and Quality Assurance
1978	Virginia Electric and Power Company	North Anna 1	938	PWR-W	Engineering, Construction and Quality Assurance
1980	Virginia Electric and Power Company	North Anna 2	938	PWR-W	Engineering, Construction and Quality Assurance
*	Duquesne Light Company	Beaver Valley 2	883	PWR-W	Engineering, Construction Management and Quality Assurance
Δ	GPU Service Corporation	Cancelled	1120	PWR-CE	Construction Management
*	Gulf States Utilities Company	River Bend 1	940	BWR-GE	Engineering, Construction and Quality Assurance
Δ	Gulf States Utilities Company	River Bend 2	940	BWR-GE	Engineering, Construction and Quality Assurance
*	Long Island Lighting Company	Shoreham 1	820	BWR-GE	Engineering, Construction Management and Quality Assurance
*	Niagara Mohawk Power Corporation	Nine Mile Point 2	1100	BWR-GE	Engineering, Construction and Quality Assurance
*	Northeast Utilities Service Company	Millstone 3	1100	PWR-W	Engineering, Construction and Quality Assurance

TABLE 1-1 (CONT'D)

STONE & WEBSTER ENGINEERING CORPORATION
REPRESENTATIVE NUCLEAR POWER PROJECTS

Completion	Client & Location	Project/Station	MW	Type and Mfr.	Services Provided
*	U.S. Department of Energy (formerly ERDA)	Clinch River Liquid Metal Fast Breeder Reactor	350	-	Construction Management Quality Assurance
Δ	Virginia Electric and Power Company		975	PWR-B&W	Engineering

NOTE: Asterisk denotes on-going project.
ΔProject Cancelled

TABLE 1-2

STONE & WEBSTER ENGINEERING CORPORATION
PARTIAL LISTING OF MODIFICATION AND/OR RETROFIT SERVICES
TO OPERATING NUCLEAR POWER PLANTS

Client & Location	Project/Station	Type and Mfr.	Services Provided
Boston Edison Company	Pilgrim 1	BWR-GE	Continuing Service
Virginia Electric and Power Company	Surry 1	PWR-W	Continuing Service
Virginia Electric and Power Company	Surry 2	PWR-W	Continuing Service
Virginia Electric and Power Company	North Anna 1	PWR-W	Continuing Service
Virginia Electric and Power Company	North Anna 2	PWR-W	Continuing Service
Power Authority of the State of New York	James A. FitzPatrick	BWR-GE	Continuing Service
Northeast Utilities Company	Connecticut Yankee	PWR-W	Continuing Service
Northeast Utilities Company	Millstone 1	BWR-GE	Specific Tasks
Northeast Utilities Company	Millstone 2	PWR-CE	Specific Tasks
Maine Yankee Atomic Power Company	Maine Yankee	PWR-CE	Specific Tasks
Niagara Mohawk Power Corporation	Nine Mile Point Unit 1	BWR-GE	Specific Tasks

TABLE 1-2 (CONT'D)

Client & Location	Project/Station	Type and Mfr.	Services Provided
Nebraska Public Power District	Cooper	BWR-GE	Continuing Service
Omaha Public Power District	Fort Calhoun	PWR-CE	Continuing Service
Commonwealth Edison Company	Zion	BWR-CE	Miscellaneous Tasks
Wisconsin Electric Power Company	Point Beach 1 & 2	PWR-W	Specific Tasks
Duquesne Light Company	Beaver Valley 1	PWR-W	Continuing Service
Northern States Power Company	Prairie Island	PWR-W	Continuing Service
Northern States Power Company	Monticello	BWR-GE	Continuing Service
Public Service of Colorado	Fort St. Vrain	HTGR-GA	Continuing Service
Public Service Electric & Gas Company	Salem 1	PWR-W	Miscellaneous Task
Power Authority of the State of New York	Indian Point 3	PWR-W	Miscellaneous Tasks
Vermont Yankee Nuclear Power Corp.	Vermont Yankee	PWR-GE	Miscellaneous Tasks
Jersey Central Power & Light Co.	Oyster Creek	BWR-GE	Miscellaneous Tasks

TABLE 1-3

PARTIAL LISTING OF BACKFITS, MODIFICATIONS AND SUPPORT ACTIVITIES FOR OPERATING NUCLEAR POWER PLANTS ENGINEERED AND DESIGNED BY OTHER A/E's

Client and Station	Scope of Work
NORTHEAST UTILITIES SERVICE COMPANY BERLIN, CONNECTICUT	
Millstone 2	Addition of condensate polishing system.
Millstone 1 and 2	10CFR50 Appendix I Study. State emergency plan for Millstone site area and LOCA dose calculations.
BOSTON EDISON COMPANY BOSTON, MASSACHUSETTS	
Pilgrim 1	Performing engineering and design and/or providing studies and support in the following areas: Scram discharge volume Dry well temperture reduction Condenser tube sheet cathodic protection Torus inspection protective coating Prompt notification and alerting system Appendix J leak rate test Implementation of Appendix R fire protection FSAR updating

Auto restart

R.G. 1.97 assessment

CO dump test in cable spreading room

Reactor building crane analysis

I&E Bulletin 79-01B

Snubber evaluation program

recirculation nozzle shields

Assisted in the evaluation of plant's health physics facilities

Assisted preparations for erection of health physics prefab structure

Prepared 17 procedures as preparation for removing the main condenser tubes and the installation of new titanium tubes

Prepared the valve testing section of the Inservice Inspection Program in accordance with the requirements of ASME XI Summer Subsection IWV

Engineering, design, planning and field assistance for radwaste system modifications

Engineering, design, planning, and field assistance for fuel pool filtration system modifications

Developed procedures for spent fuel rack replacement

Evaluation and recommendations for radwaste tank modifications

	Scheduled maintenance activities for a planned outage
	Quality Assurance and Control support provided and tasks performed: Operational QA Audits Tread Analysis of Corrective Action Documents and audit deficiencies regarding fire protection Corporate Corrective Action Program evaluation and improvement Enhancement of Internal Audit Program Procurement Quality Assurance Training and qualification of NDE and QC personnel Civil/Structural engineering inspection for the Block Wall 80-11 project Developed QC Inspection Manual Developed QC Training and Certification Manual
NORTHERN STATES POWER COMPANY	
Prairie Island	Prepared an engineering study evaluating problems associated with the containment and auxiliary building ventilation systems. Upon completion of the study, prepared engineering modifications of the ventilation system.
OMAHA PUBLIC POWER DISTRICT	
Fort Calhoun	Provided engineering services for the design of a plant security system.

	Provided engineering services for modifications to the solid radwaste system.
	Provided engineering modifications for upgrading the plant fire protection system.
	Performed an engineering analysis of the pressurizer relief system.
	Performed an engineering analysis of the irradiation sample cask.
	Performed a study evaluating the plant ventilation system and prepared modification recommendations.
WISCONSIN ELECTRIC POWER COMPANY WISCONSIN MICHIGAN POWER COMPANY	
Point Beach 1 & 2	Engineering, design, and planning to increase the cooling capacity of the spent fuel pool.
	10CFR50 Appendix I Study.
	Conceptual recommendations regarding blowdown evaporator reboiler control system.
	Quality Control inspection of modified or installed back-fitted systems.
WISCONSIN PUBLIC SERVICE CORPORATION	
Kewaunee	On-site evaluation of the existing spare parts program, and presentation of a report documenting findings and recommendations. A draft plan for implementing suggested improvements will be provided.
	Emergency planning assistance.

NEBRASKA PUBLIC POWER DISTRICT	
Cooper	Completed a study to determine the feasibility of adding reheat capability.
	Prepared a study to determine the feasibility of adding a steam reboiler to provide plant auxiliary steam.
	Prepared and recommended modifications for the service water system.
	Prepared and recommended modifications to the plant fire protection system.
MASSACHUSETTS INSTITUTE OF TECHNOLOGY CAMBRIDGE, MASSACHUSETTS	
M.I.T. Research Reactor	Review of documentation for modification to reactor to ensure it met QA program.
CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.	
Indian Point 2	Study of condenser tube failures.
TOLEDO EDISON COMPANY TOLEDO, OHIO	
Davis Besse 1	Development of Corporate Outage Management Program for Nuclear and Fossil Units. Assisted in the development and implementation of a detailed outage management system at Davis Besse 1.
PHILADELPHIA ELECTRIC COMPANY	
Peach Bottom Units 2 & 3	Performed a maintenance procedures audit.
YANKEE ATOMIC ELECTRIC COMPANY	
Vermont Yankee	Prepared 75 maintenance procedures and 9 adminstrative procedures. Also prepared the Station Maintenance Department training procedure.

	Conducted a Spare Parts Management Study.
SOUTHERN CALIFORNIA EDISON CO.	
San Onofre	Performed a spare parts management system study to determine whether or not a computer-based material management system was justified for the San Onofre Nuclear Generating Station.

SECTION 2

APPROACH, SCHEDULE, ORGANIZATION, AND RESUMES

2.1 OBJECTIVE

Stone & Webster will independently monitor the performance of the Construction Completion Program, which is to be implemented by Consumers Power Company (CPCo), will assist CPCo in evaluating the effectiveness of the program and will provide NRC and CPCo with progress reports.

2.2 APPROACH

The assessment of the Construction Completion Program will be conducted by Stone & Webster in accordance with CPCo's Quality Assurance and Construction Completion programs. The effort will consist of the following three tasks:

Development of an Assessment Plan

Site Monitoring

Overview Evaluation

2.2.1 Development of an Overview Plan

A Quality Assurance Plan will be developed for the scope of this program. To support the plan, special Stone & Webster procedures and checklists will be developed for use by a team to be established at the site to monitor the effectiveness of the Construction Completion Program. The Construction Completion Program, CPCo Quality Assurance Program, pertinent CPCo procedures, organizational charts, status of safety-related systems, construction problem areas, drawings and specifications, and pertinent reports will be reviewed to develop checklists that cover the specific scope, responsibilities, methodology, and schedule for the overview. These procedures and checklists will include appropriate elements of the Stone & Webster Quality Assurance Program.

2.2.2 Site Monitoring

A site team will be established to monitor the effectiveness of the Construction Completion Program. The team will consist of a Program Manager and two functional groups. One group will assess the adequacy and the completeness of procedures and inspection plans, including quality assurance, quality control and installation work packages being used to complete the work. The other group will review certain aspects of construction activities which relate to the performance of the Quality Control Inspection Program and the installation activities. Qualified engineers, inspectors, and auditors will be assigned to the site team as required. Qualifications of personnel and demonstration of independence will be a precondition to such assignments. The Program Manager will maintain communications with CPCo Site Manager and NRC. These two groups

will use special procedures, checklists, and sampling techniques to evaluate the following:

- Adequacy of controls and practices in the Quality Assurance Program to determine that design information is incorporated in installed hardware.
- Conformance of installed hardware to design information in specifications, drawings, etc.
- Completeness of CPCo procedures regarding construction activities, personnel qualifications, training programs, and organizational practices.
- Compliance of Construction Completion Program teams with prescribed procedures.
- Compliance of Quality Control personnel with applicable procedures.
- Compliance of construction activities with applicable procedures.

Weekly progress meetings will be held with CPCo, its contractors and NRC.

2.2.3 Overview Evaluation

Observations of the Site Monitoring Team will be submitted for evaluation to a Senior Overview Committee on a monthly basis. Programmatic observations of a serious nature will be submitted immediately to the Committee. The Committee will consist of senior representatives from Stone & Webster Quality Assurance, Construction, and Engineering Departments. The Committee will classify, assign a significance of concern, and report observations to CPCo and NRC. A final report will be submitted 30 days after completion of the program.

2.2.4 Organization

See Figure 2.1

2.2.5 Schedule

See Figure 2.2

2.2.6 Resumes

See pages following figures

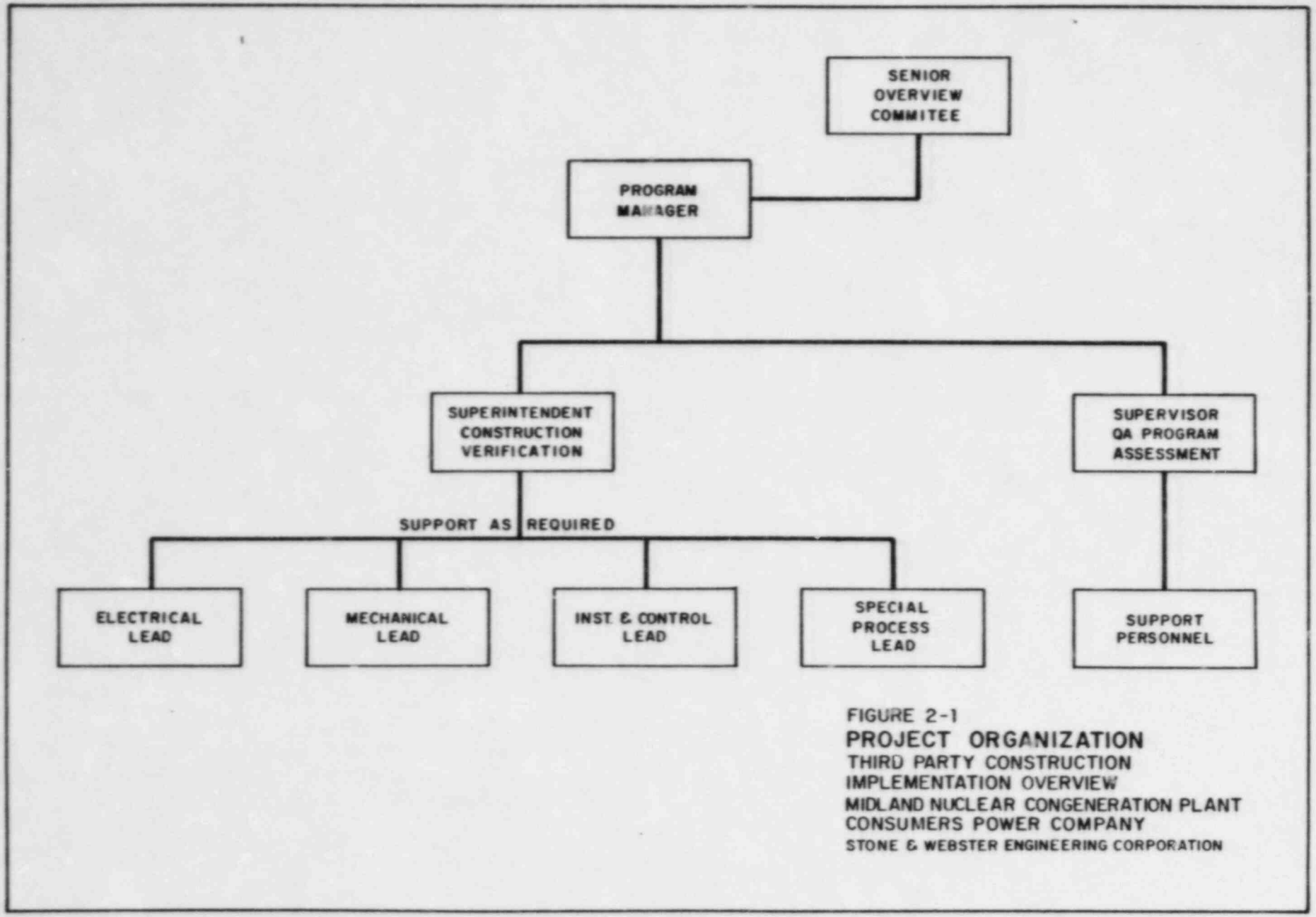


FIGURE 2-1
PROJECT ORGANIZATION
THIRD PARTY CONSTRUCTION
IMPLEMENTATION OVERVIEW
MIDLAND NUCLEAR CONGENERATION PLANT
CONSUMERS POWER COMPANY
STONE & WEBSTER ENGINEERING CORPORATION

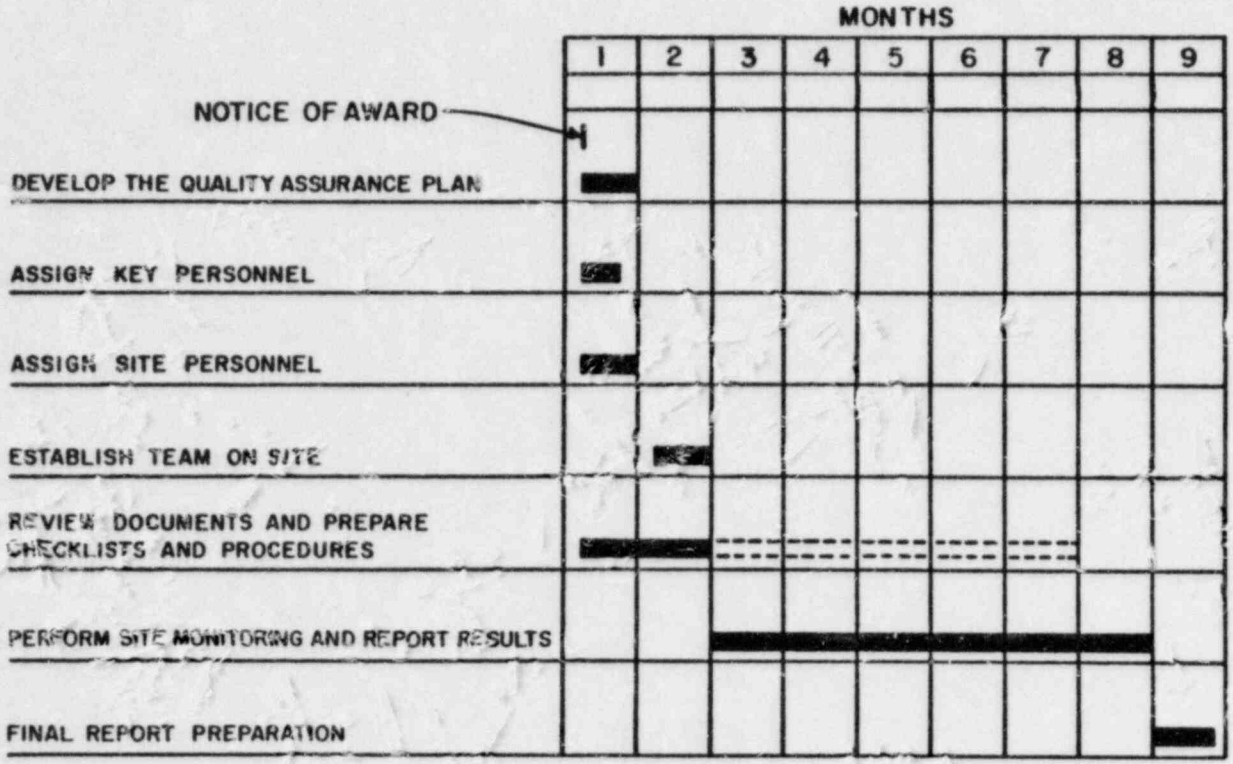


FIGURE 2-2
PROJECT SCHEDULE
THIRD PARTY CONSTRUCTION
IMPLEMENTATION OVERVIEW
MIDLAND NUCLEAR COGENERATION PLANT
CONSUMERS POWER COMPANY
STONE & WEBSTER ENGINEERING CORPORATION

Resumes are attached for the following personnel:

Program Manager	W. MacKay
Senior Overview Committee	C. O. Richardson N. B. Cleveland G. M. Schierberg M. Giannattasio E. A. Long

TITLE	NAME
Superintendent of Construction Verification	J. C. Thompson*
Inspectors	W. D. Miller R. S. Scallen J. R. Langston
Inspection Support Engineers	A. A. Smith J. Hannwacker
Supervisor of Program Assessment	F. B. Bearham*
Auditor	W. H. Sienkiewicz

* These individuals have U.K. equivalent to B.S. degree.

WILLIAM MACKAY PROGRAM MANAGER

EDUCATION

Kirkaldy Technical School - B.S. in Civil Engineering

EXPERIENCE SUMMARY

Mr. MacKay joined Stone & Webster in 1956 as a Field Engineer after completing eight years of construction assignments in Scotland and Canada, involving hydroelectric projects, coal mine construction, and the installation of weather stations. His Stone & Webster assignments have resulted in progressive responsibilities from Field Engineering on fossil fuel and nuclear power electric generating stations to his current assignment as Resident Manager on a nuclear power station for Northeast Utilities Service Company.

DETAILED EXPERIENCE

Mr. MacKay is presently the Resident Manager at Millstone Nuclear Power Station Unit No. 3 for Northeast Utilities Service Company at Waterford, Connecticut. Prior to his assignment at the site he spent approximately one year acting as the Construction Specialist on this project, resident with the project engineering team.

Previous to his Millstone assignment he was Superintendent of Construction for two 815 MW units at the nuclear power station at Surry, Virginia, for Virginia Electric and Power Company.

Before being promoted to Superintendent, Mr. MacKay served as Resident Engineer and Assistant Superintendent of Construction on two nuclear units: a 490 MW unit at Haddam Neck, Connecticut, for Connecticut Yankee Atomic Power Company and the unit at Surry, Virginia for Virginia Electric and Power Company. His earlier experience as Field Engineer and Chief Field Engineer was on a fossil fuel unit for Hydro-Electric Power Commission of Ontario, a titanium dioxide plant for British Titan Products Company, Ltd. of Sorel, Canada, and a fossil fuel unit for Hartford Electric Light Company.

RICHARDSON, CARL O., JR. SENIOR OVERVIEW COMMITTEE

EDUCATION

University of Massachusetts at Amherst - Bachelor of Science, Mechanical Engineering
State University of New York - Master of Business Administration

LICENSES AND REGISTRATIONS

Professional Engineer - Massachusetts, New York, and Pennsylvania

EXPERIENCE SUMMARY

Mr. Richardson has over 21 years of experience in management of turbine plant systems for nuclear power plant projects, and turboshaft engines used in the aircraft. Currently, as Engineering Manager, he sponsors the following divisions: Power, Advisory Operations, Operations Services, and Materials Engineering. He also sponsors Conceptual Engineering and Administrative Services.

Since joining Stone & Webster Engineering Corporation (SWEC) in 1968, he has been Project Manager on two pressurized nuclear power plants, responsible for engineering and construction on one and support services on the other.

Prior to joining SWEC, Mr. Richardson worked as a Mechanical Engineer with a utility company designing a 500 MW boiling water reactor nuclear power plant. Other previous experience included experience as an installation and service engineer on aircraft gas turbine equipment and test engineering on a variety of turbines and generators.

EDUCATION

Northeastern University - B.S. in Civil Engineering
Harvard Graduate School of Engineering - M.S. in Civil Engineering
Massachusetts Institute of Technology - Certificate Aeronautical Engineering
Northeastern University - Management Development

LICENSES AND REGISTRATIONS

Registered Professional Engineer - Kentucky, Massachusetts, Pennsylvania, Texas, Alberta, Canada (temporary)

PROFESSIONAL AFFILIATIONS

American Society of Civil Engineers - Member

PATENTS

Adjustable Rotary Vibrator, Patent No. 2,505,753

EXPERIENCE SUMMARY

Mr. Cleveland is a Vice President and Deputy Director of Construction with 40 years of broad engineering experience, including supervision and coordination of major engineering and construction activities. The major portion of this experience has been while in the employ of Stone & Webster Engineering Corporation, where his assignments have ranged over a diverse field, including nuclear and fossil steam power plants, industrial plants, hospitals, wharfs, substations and transmission lines, site selections, subsoil investigations and reports.

In October, 1980, Mr. Cleveland was appointed Deputy Director of Construction. In addition to his Construction Department administrative duties, his responsibilities include construction management of nuclear and fossil power plants and industrial and hospital projects.

In May, 1977, Mr. Cleveland was appointed Vice President, Quality Assurance Department, and in this capacity he had overall responsibility for corporate quality assurance activities.

In November, 1975, Mr. Cleveland became head of the Project Management Department. As Senior Manager of Projects, Project Manager and Project Engineer, his responsibilities not only included administrative duties and client liaison, but also the determination of basic design and plant layout and the translation thereof to the final working drawings and specifications.

His prior assignments included work as a structural engineer, field liaison, and construction supervisor on both coal and oil fired power plants, breweries, hospitals and hydro work.

SCHIERBERG, GERALD M. SENIOR OVERVIEW COMMITTEE

EDUCATION

Harris Teachers College - Civil Engineering
Washington University - Civil Engineering

LICENSES AND REGISTRATIONS

Registered Professional Engineer - Missouri, Massachusetts and California
Certified Level III Inspection Engineer ASME Section III, Division 2

EXPERIENCE SUMMARY

Mr. Schierberg has been employed by Stone & Webster since 1959. Since joining our organization, he has had 14 years' experience in Quality Assurance and over eight years' experience in field engineering and constuction on fossil fueled power generation and distribution projects. He is currently assigned as Manager, Procurement Quality Assurance, Quality Assurance Department.

Prior to his nuclear experience, Mr. Schierberg had over eight years' experience in field engineering and construction of various fossil fueled power plants and power distribution systems, with responsibility for field engineering and supervision of field office engineering groups. With Stone & Webster, he was assigned as a Quality Control Engineer for three years at the Surry Nuclear Plant, responsible for onsite structural and mechanical Quality Control activities. As Superintendent, Field Quality Control, at the James A. Fitzpatrick Nuclear Power Plant project, he was responsible for all onsite Quality Control activities for three years.

For two years, he was assigned as the Senior Superintendent, Field Quality Control at the Boston Headquarters Office, responsible for the administration of the QC Programs and onsite Quality Control activities for the James A. Fitzpatrick site, Beaver Valley Unit 1 site, and the River Bend and Koshkonong Nuclear Power Plant Projects. As Manager, Field Quality Control Division, for 4 years he was responsible for establishing and maintaining a Field Quality Control organization at various sites for the implementation of Quality Control systems.

GIANNATTASIO, MICHAEL SENIOR OVERVIEW COMMITTEE

EDUCATION

Georgia Institute of Technology - Bachelor of Science in Electrical Engineering

LICENSES AND REGISTRATIONS

Professional Engineer - Massachusetts, Washington

EXPERIENCE SUMMARY

Mr. Giannattasio is an Assistant Chief Electrical Engineer in the Electrical Division and has over 35 years of experience in his field. He has served in all capacities of responsibility. His last assignment was as an Assistant Project Engineer for 4½ years on a nuclear generating power plant.

He has been associated with projects in all phases of power generation (fossil, nuclear, and hydroelectric) which included units rated up to 1,026 MVA, substations and switchyards rated from 13.8 to 500 kV, hospitals, brewery, racetrack, 140 ft radio telescope installation, and a nuclear research, development, and manufacturing complex.

PROFESSIONAL AFFILIATIONS

Institute of Electrical and Electronics Engineers - Member

LANGUAGES

Some Italian and French

LONG, EUGENE A. SENIOR OVERVIEW COMMITTEE

EDUCATION

University of Maine - Bachelor of Science in Civil Engineering
Illinois Institute of Technology - Courses in Indeterminate Structures
Northeastern University - Andover course in Management Development

LICENSES AND REGISTRATIONS

Professional Engineer - Massachusetts, Nevada

EXPERIENCE SUMMARY

Mr. Long has 36 years of experience in the engineering industry. Currently as an Assistant Engineering Manager in the Engineering Department, he directly assists the Engineering Manager who is in complete change of all technical and administrative engineering duties for all corporate fossil and fossil-related power and industrial projects.

Since joining Stone & Webster Engineering Corporation (SWEC) in 1955, he has worked in the Structural Division as an Engineer, Structural Engineer, Senior Structural Engineer, Assistant Chief Structural Engineer, and Chief Structural Engineer, where he was responsible for the technical and administrative direction of the entire Division. This included specialists, structural engineers, designers, draftsmen, architects, transmission and substation engineers, encompassing all power plant and industrial project activity. He has also served as Lead Engineer on power plant projects, where he was responsible for all civil, structural, and architectural engineering work. This included direct supervision of all conceptual design, design drawings, estimates, preparation of specifications, purchase of materials, and construction field liaison.

Mr. Long has had experience in the design and engineering of heavy industrial construction with special emphasis on power plants, both nuclear and fossil. This experience covered engineering activities, from the basic conceptual design and coordination of designers to the responsible control of engineering of the structural phase of the entire project. He has also worked on proposals, reports, and site selections and investigations, requiring comprehensive knowledge of the economic requirements of construction, production, and scheduling.

Prior to joining SWEC, Mr. Long performed structural design work for Burns & Roe, Sargent and Lundy, and United Engineers & Constructors.

PROFESSIONAL AFFILIATIONS

American Society of Engineers - Member
Boston Society of Engineers - Member

COMMITTEES:

Task Committee I - General Requirements and Quality Assurance - Secretary

PUBLICATIONS

"Problem - Site Construction," Power Engineering, July 1967.

THOMPSON, JAMES C.

SUPERINTENDENT OF CONSTRUCTION
VERIFICATION

EDUCATION

Westminster College, London - ONC in Mechanical Engineering
South-West Essex College, London - HNC in Civil Engineering

LICENSES AND REGISTRATIONS

ASME Level III Inspection Engineer
Professional Engineer - Virginia and Louisiana

EXPERIENCE SUMMARY

Mr. Thompson initially joined Stone & Webster in July 1968 as a Senior Design Engineer at the Headquarters Offices in Boston. Subsequent to a brief assignment with the Ralph M. Parsons Company in Los Angeles, he rejoined Stone & Webster in May 1971 and was promoted to Assistant Superintendent of Field Quality Control at the North Anna Power Station. In July 1974 he was promoted to Superintendent of Field Quality Control at North Anna and in May 1975 was transferred to the River Bend Nuclear Power Station. Mr. Thompson has since held the Superintendent's position at the Forked River Site and with the Quality Assurance Staff at the River Bend Station. He is presently assigned as Superintendent of Field Quality Control at the Nine Mile Point Nuclear Power Station Unit No. 2, which is currently under construction.

Prior to joining Stone & Webster, Mr. Thompson was a Civil/Structural Engineer and Site Resident Engineer for the Ralph M. Parsons Company in England and Iran, where he was responsible for assigning tasks to engineers and draftsmen to complete the design of chemical plants, approving and testing subcontractors' works, surveying, exploration and negotiating extra payment to changes.

DETAILED EXPERIENCE RECORD
THOMPSON, JAMES C.

STONE & WEBSTER ENGINEERING CORPORATION, BOSTON, MA (May 1971 to Present)

Appointments:

Superintendent of Field Quality Control - July 1974
Assistant Superintendent of Field Quality Control - May 1971

Nine Mile Point Nuclear Power Station Unit No. 2, Niagara Mohawk Power Corporation (Nov 1981 - Present)

As SUPERINTENDENT OF FIELD QUALITY CONTROL, responsible for managing the Corporate Field Quality Control Program at a Boiling Water Reactor Unit. In addition to managing the Program as applied to site contractors (SWEC performed Construction Management), other responsibilities include interfacing with Client Quality Assurance, US NRC and the NSSS supplier and staff functions such as procedure development and manpower resource development.

River Bend Nuclear Power Station Unit No. 1, Gulf States Utilities (May 1979 - Nov 1981)

As SUPERINTENDENT OF FIELD QUALITY CONTROL, assisted the Project Quality Assurance Manager in interfacing with Project Management, Engineering and the Boston specialty groups as a Quality Assurance Staff member for a (2) Unit Boiling Water Reactor. Responsible for interfacing with Project Management and Engineering groups in the resolution of problems encountered in the construction and manufacturing phases to dispose of nonconformities and coordinate scheduling activities. Also provided Quality Assurance input to the development or revision of cost estimates.

Forked River Nuclear Power Station, GPU Service Corporation (July 1977 - April 1979)

As SUPERINTENDENT OF FIELD QUALITY CONTROL, assigned to the Client to represent them as Owner in all quality-related matters at a Pressurized Water Reactor Unit. Activities included the over inspection and surveillance of the Construction Manager and all contractors/subcontractors and QA interfacing between the manufacturers/suppliers and construction contractors. All work was performed in accordance with the GPUSC Quality Assurance Program.

River Bend Nuclear Power Station Unit No. 1, Gulf States Utilities (May 1975 - June 1977)

As SUPERINTENDENT OF FIELD QUALITY CONTROL, responsible for managing the Corporate Field Quality Control Program at a Boiling Water Reactor Unit. Duties included preparing manpower estimates, developing test and inspection schedules, reviewing procedures and drawings for quality-related documents, developing training programs and participating in Client and NRC audits. The Corporate Program reflected the requirements of regulatory documents, including 10CFR50, the ASME Code and ANSI Standard Regulatory Guides, etc.

North Anna Power Station, Virginia Electric & Power Company (May 1971 - May 1975)

As SUPERINTENDENT OF FIELD QUALITY CONTROL (July 1974 - May 1975), responsible for implementation of the Project Field Quality Control Manual for the (4) Unit Pressurized Water Reactors. Duties were similar to those outlined above for the River Bend Station and, due to the more advanced stage of work, they included performing as liaison with the Authorized Inspection Agency for ASME III Piping.

As ASSISTANT SUPERINTENDENT OF FIELD QUALITY CONTROL (May 1971 - July 1974), responsible for assuring that inspections were conducted in an efficient manner by suitable experienced and trained personnel. Duties also included assigning personnel to the various tasks to assure compliance with the program and assisting in the development of a minority training program to utilize minorities as inspectors.

RALPH M. PARSONS COMPANY, LOS ANGELES, CA (March 1970 - May 1971)

Appointments:

Civil/Structural Engineer

As CIVIL/STRUCTURAL ENGINEER, responsible for designing steel and concrete structures for chemical and industrial plants. Duties also included preparation of cost comparisons, bid summaries and related administrative tasks. Typical projects included:

Magnesium Production Plant for National Lead Company

Chemical Plant for Shell Oil Company

STONE & WEBSTER ENGINEERING CORPORATION, BOSTON, MA (July 1968 - March 1970)

Appointments:

Senior Designer

As SENIOR DESIGNER, duties included designing steel and reinforced concrete buildings and structures for Pressurized and Boiling Water Reactors, designing earth/water retaining cofferdams and temporary rigging facilities. Typical projects included:

Nuclear Power Plant (BWR) - Power Authority of the State of New York

Nuclear Power Plant (PWR) - Virginia Electric & Power Company

Nuclear Power Plant (PWR) - Duquesne Light Company

RALPH M. PARSONS COMPANY, ENGLAND AND IRAN (Dec 1965 - July 1968)

Appointments:

Civil-Structural Engineer/Site Resident Engineer

As CIVIL-STRUCTURAL ENGINEER/SITE RESIDENT ENGINEER, responsible for overall supervision and specifically for the Civil-Structural Group when Parsons opened

their London Office; duties included assigning tasks to engineers and draftsmen to complete the design of a chemical plant, approving and testing subcontractors' work, subsurface exploration, surveying and negotiating for extra payments due to changes. Typical projects included:

Liquified Petroleum Gas Plant - Iran Oil Company

Carbon Black Plant in England - Columbia Carbon Company

FLUOR ENGLAND LIMITED, ENGLAND AND HOLLAND (Nov 1960 - Dec 1965)

Appointments:

Civil/Structural Designer

As CIVIL/STRUCTURAL DESIGNER, responsible for designing, estimating quantities and preparing material take-offs for activities related to the design and construction of petro-chemical plants. Typical projects included:

Petro-Chemical Plant in Sweden - Esso Svenska

Acetylene Plant in England - British Geon.

MILLER, WILLIAM D. INSPECTOR

EDUCATION

Crozet High School - Diploma
Jefferson School of Commerce - Bookkeeping
International Correspondence School - Highway Engineering
Allis Chalmers - Electrical Transformers
International Correspondence School - Electrical Maintenance
Virginia Department of Highway - Concrete & Asphalt Technology

EXPERIENCE SUMMARY

Mr. Miller joined Stone & Webster in May 1970 as a FQC Inspector at the North Anna Power Station. During his 12 years with Stone & Webster he has served as FQC and Senior QC Inspector at the Shoreham Nuclear Power Station, Surry Nuclear Power Station, Gulf States Utility, Connecticut Yankee Power Station, and Millstone III. He is currently serving as Inspection Supervisor in the Civil/Structural discipline at Millstone III. He was appointed to the position of Senior QC Inspector at North Anna in August 1975 and to Inspection Supervisor in February 1982 at Millstone III.

Prior to joining Stone & Webster, Mr. Miller was a building inspector for the City of Richmond, VA, and Highway Inspector for the Virginia Department of Highways. He also served as a sergeant in the U.S. Army.

DETAILED EXPERIENCE RECORD
MILLER, WILLIAM D.

STONE & WEBSTER ENGINEERING CORPORATION, BOSTON, MA. (May 1970 - Present)

Appointments:

Quality Control Inspection Supervisor - June 1981
Senior Quality Control Inspector - August 1975
Quality Control Inspector - May 1970

Northeast Utilities Service Company - Millstone Nuclear Power Station (June 1981 - Present)

As QUALITY CONTROL INSPECTION SUPERVISOR (June 1981), in charge of twenty men - responsible for inspections on concrete steel, Concrete Lab, backfill, painting and rock blasting.

Gulf States Utilities - River Bend, LA. (Jan 1981 - June 1981)

As SENIOR INSPECTOR (Jan 1981) was responsible for inspection of Electrical Penetration Replacement, installation of cables and cable trays, inspection of bolt tensioning, pipe supports, pipe restraints, pipe welding, pipe hangers, rework on hangers, and all reinspections on these nuclear systems. Performed receipt and storage inspections on electrical, mechanical, and structural materials. Was responsible for the review of manufacturers documentation to insure accuracy and compliance with ASME, ASTM, ANSI, and other industrial standards.

Virginia Electric & Power Co, Surry, VA., Surry Nuclear Power Station (April 1980 - Jan 1981)

As SENIOR QUALITY CONTROL INSPECTOR performed Hanger Inspections.

Northeast Utilities Service Company - Connecticut Yankee Power Station, Haddam Neck, CT. (March 1980 - April 1980)

As SENIOR QUALITY CONTROL INSPECTOR performed Electrical Inspections.

Gulf States Utilities - River Bend, LA. (Feb 1980 - March 1980)

As SENIOR QUALITY CONTROL INSPECTOR performed Structural Steel Inspections.

Virginia Electric & Power Co., Surry, VA., Surry Nuclear Power Station (Sept 1979 - Jan 1980)

As SENIOR QUALITY CONTROL INSPECTOR performed Hanger Inspections.

Northeast Utilities Service Company, Millstone Nuclear Power Station, Unit III (Feb 1979 - Sept 1979)

As SENIOR QUALITY CONTROL INSPECTOR performed Receipt Inspections.

Virginia Electric & Power Co. Mineral, Va., North Anna Power Station (August 1975 - Feb 1979)

As SENIOR QUALITY CONTROL INSPECTOR performed Electrical Inspections.

Long Island Lighting Co., Shoreham Nuclear Power Station (Oct 1974 - Aug 1975)

As FIELD QUALITY CONTROL INSPECTOR performed Electrical and Structural Inspections.

Virginia Electric and Power Co., Mineral, VA. North Anna Power Station (May 1970 - Sept 1974)

As FIELD QUALITY CONTROL INSPECTOR performed inspection of construction work on new roads and bridges, including blasting operations and rock bolt installations.

City of Richmond, Richmond, VA. (March 1969 - May 1970)

As Building Inspector, was responsible for the inspection of new city buildings, streets, and pipelines under construction.

Virginia Dept. of Highways, Commonweath of VA. (Oct 1963 - March 1969)

As Highway Inspector, served as Construction Inspector for Interstate Highways.

U.S. Army (March 1952 - March 1954)

Sargeant

SCALLEN, RICHARD S. INSPECTOR

EDUCATION

Menard Memorial High School
Louisiana State University
Alexandria Trade School
United States Navy

TECHNICAL SOCIETIES

California Metal Trades Association
American Production & Inventory Control Society

EXPERIENCE SUMMARY

Mr. Scallen joined Stone & Webster in March 1980 as a Senior Field Quality Control Inspector at the River Bend Nuclear Power Station, St. Francisville, Louisiana. His assigned tasks include the following: Inspection Planning Review of Field Inspection Reports for completeness and technical content; Review Drawings, Engineering Design and Specification Changes for applicability to existing or development of inspection plans; coordinates revisions and distribution of Inspection Handbook; oversees Inspection Plan Index and distribution. He has the responsibility of in-putting into the computer all the inspection report data in an expedient and correct format each month. Mr. Scallen is also responsible for the review of all Field Purchase Requisitions. The field purchase requisition references the specifications, drawings, or documents from which the description and Quality Assurance Requirements were obtained and the extent to which they are applicable. Another duty was to ensure that all the Nonconformance and Disposition Reports were complete, correct and ready for computer input to Boston. Mr. Scallen was the Resident Instructor for the Inspection Report System at the River Bend Project.

Prior to joining SWEC, he was employed with Brown & Root, Inc., Power Division, Glen Rose, Texas. In this capacity he was responsible for ensuring that all ASME Piping Fabrication and Erection was accomplished in accordance with the applicable procedures by review and verification of fabrication documentation. He prepared and implemented the Quality Control documentation procedures and instructions Plan, coordinated and directed the activities required to ensure the verification of all safety-related Civil, Electrical, and non-ASME related components. Mr. Scallen established and maintained interface with the Authorized Nuclear Inspector, the Completions Group, Civil Engineering, Field Piping Engineering, and Quality Control Inspectors. Another of Mr. Scallen's duties consisted of preparing instructions and procedures for finalizing the Code Data Forms N-5/N-3 for turnover to the client.

Prior to his field nuclear experience, Mr. Scallen had seven (7) years experiene with Anchor Darling Valve Company in Hayward, California. As Production Planning and Control Division Supervisor, Mr. Scallen had responsibility for development and maintenance of scheduling procedures for all work internal and external. Also he was responsible for establishing internal manufacturing schedules, monitoring, controlling, machine loading and reporting status to the management in manufacturing Nuclear Valves.

LANGSTON, JAMES R. INSPECTOR

EDUCATION

Churchland High School, Portsmouth, Va.

EXPERIENCE SUMMARY

Mr. Langston joined Stone & Webster Engineering Corp. in May, 1973 as a Quality Control Inspector Level I at the North Anna Power Station of the Virginia Electric & Power Co. His basic duties involved radiographic inspection of components as a Level II Radiographer. On various occasions Mr. Langston performed piping and welding inspections which involved visual, magnetic particle, and liquid penetrant inspection of components. He was certified as a Level II Radiographer in June, 1973 and as a Liquid Penetrant and Magnetic Particle Inspector in March, 1974.

During the period of July, 1974 to February, 1975, he was transferred to the Beaver Valley Power Station in Pennsylvania, as a Piping and Welding Inspector while the North Anna Power Station was in temporary shut-down. In February, 1975 he returned to North Anna as a night shift Lead Radiographer. Mr. Langston was promoted to Quality Control Inspector Level II in April, 1976 and to Senior Quality Control Inspector in September, 1976. In September, 1977 Mr. Langston received his Level II Radiographic Film Interpretation certification.

In January, 1979 Mr. Langston was transferred from the North Anna Power Station in Virginia to the Shoreham Nuclear Power Station in New York as a night shift Radiographic Supervisor and a Radiographic File Interpreter.

Since April, 1980 he has held the title of Q.C. Inspection Supervisor and as of January, 1981 was appointed Senior Site Representative for contract work with Courter & Co. at Shoreham. In this capacity, he administered manpower and equipment for associated NDT involvement, was Site Radiological Safety Officer, and coordinated training and QA/NDT with S&W in Boston, Massachusetts to accomplish job requirements at Shoreham.

In April, 1981 Mr. Langston was appointed one of the two supervisors in the Pipe Support Group.

In November, 1981 Mr. Langston was appointed Supervisor of the ASME As-Built Line Walk Group, coordinating training and manpower to support the construction effort. Mr. Langston has had nine years experience in nuclear power plant construction in radiography, piping and welding, lazer cleaning and flushing, documentation, pipe supports, and ASME as-builts.

Prior to joining Stone & Webster Engineering Corporation, Mr. Langston was a Chief Radiographer with Froehling & Robertson, Inc., Richmond, Virginia for over ten years. During this period he was certified Level II Film Interpreter, Radiographer, Ultrasonic Test Inspector, Liquid Penetrant Inspector, and Magnetic Particle Inspector.

SMITH, ALBERT A. INSPECTION SUPPORT ENGINEER

EDUCATION

Syracuse University - B.M.E.
City College of New York - M.B.A. Candidate
Various Graduate Engineering and Continuing Education Courses

LICENSES AND REGISTRATIONS

Professional Engineer - New York

EXPERIENCE SUMMARY

Mr. Smith has 30 years of extensive experience in mechanical engineering, manufacturing engineering, instrument and Control System Engineering, and management. His most recent experience as a control systems engineer has been in petrochemical plant design and nuclear power plant control system design review.

Since joining Stone & Webster Engineering Corporation (SWEC) in 1974, he has been assigned as a Control Systems Engineer to a pressurized water reactor plant, a major ethylene grass-roots plant, ethylene front end and revamp plants, a natural gas recovery and treatment plant, a cellulose waste products chemical conversion plant, a nitroparaffins plant, and a SNG plant.

During this time, he has been responsible for the design of process and boiler control systems, specifying analog and digital control systems, control instruments, analyzers, control panels, CRTs, and consoles for analog and digital equipment. He is familiar with the latest state-of-the-art equipment, including the Honeywell TDC-2000 digital system and microprocessor programmable controller equipment. He has conducted design reviews of electrical elementary diagrams on various phases of control systems for a nuclear power plant.

Prior to joining SWEC, Mr. Smith held several responsible positions as Senior Mechanical Engineer, Manufacturing Engineering Manager, and Engineering Section Head for a number of electronics and aerospace companies.

PROFESSIONAL AFFILIATIONS

Instrument Society of America - Member

HANNWACKER, JOSEPH INSPECTION SUPPORT ENGINEER

EDUCATION

Polytechnic Institute of Brooklyn - B.E.E.
Columbia University - Graduate Physics Studies - One Semester

LICENSES AND REGISTRATIONS

Professional Engineer - New York

EXPERIENCE SUMMARY

Mr. Hannwacker joined Stone & Webster Engineering Corporation in November 1980 as an Electrical Engineer in the Electrical Division. He has over seven years' experience in the engineering and design of fossil and nuclear power plants.

Mr. Hannwacker is presently assigned the Shoreham Nuclear Power Station site, participating in troubleshooting efforts during the startup operation of the plant.

Mr. Hannwacker's experience also includes equipment qualification for nuclear power plants, the development of one-line diagrams, power plant calculations, preparation of specifications bid evaluation, and field troubleshooting.

From 1954 to 1974, he was engaged in aerospace research and development in the field of microwave/electronic engineering. His principal duties were in the area of the development of radar systems and components.

PROFESSIONAL AFFILIATIONS

Institute of Electrical and Electronics Engineers - Member

PUBLICATIONS

Duncan, Henning, and Hannwacker, "Properties of a Ferrite Coaxial Isolator," Proc. of IRE, April 1957.
Giordano and Hannwacker, "Studies of Multistem Drift Tube Accelerator Structures, "IEEE Transactions on Nuclear Science, June 1967.

DETAILED EXPERIENCE RECORD
HANNWACKER, JOSEPH

STONE & WEBSTER ENGINEERING CORPORATION, NEW YORK, N.Y. (1980 to Present)

Appointment:

Electrical Engineer

Shoreham Nuclear Power Station, Long Island Lighting Company

Mr. Hannwacker is presently assigned to the Shoreham Nuclear Power Plant site to resolve problems in plant wiring uncovered during plant startup.

Pilgrim Nuclear Power Station, Boston Edison Company

Mr. Hannwacker was responsible for establishing the qualification of existing Class 1E equipment which is required by the Nuclear Regulatory Agency prior to the restartup of the station.

Hicksville Operation Center, Long Island Lighting Company

Mr. Hannwacker was assigned to the Nuclear Engineering Department to assist in their effort to qualify Class 1E equipment in accordance with the requirements of IEB 70-01B. Tasks included reviewing existing environmental and seismic documentation, gathering additional qualification information from vendors, and evaluating submitted proposals.

Salem Nuclear Power Station, Units 1 and 2, Public Service Electric and Gas of New Jersey

Mr. Hannwacker was responsible for the preparation of emergency planning in the event of a radiological accident at the Salem Nuclear Generating Station in New Jersey.

BURNS AND ROE (1978 to 1980)

As ELECTRICAL ENGINEER "A," Mr. Hannwacker was responsible for the development of one-line diagrams and the performance of power plant calculations, including the short-circuit voltage drop and station ground grid design. He also reviewed the logic and electrical wiring diagrams. His additional duties included the preparation of specifications through the release for procurement with a follow-up on the manufacturer's fabrication design. He also supervised the design effort for the installation of plant electrical equipment. He served as a liaison with client/contractor to resolve electrical design problems arising during construction, and he conducted troubleshooting efforts at the field, when required.

Mistersky Generating Station Unit 7 - 60 MW Oil-Fired Plant, City of Detroit

Big Cajun Generating Station No. 2, Unit 3 - 688 MW Coal-Fired Plant, Gulf States Utilities

EBASCO SERVICES, INC. (1974 to 1978)

As ELECTRICAL ENGINEER, Mr. Hannwacker's responsibilities included the preparation of specifications and bid evaluation for uninterruptible power supplies, isolated phase bus duct, auxiliary and standby transformers, medium voltage motors, and an emergency diesel-generator unit. He was involved in the development of key one-line diagrams for an air quality control system, which included performing the required short-circuit and voltage drop studies associated with the power distribution system to the electrostatic precipitators and sulfur dioxide air scrubber equipment. He also performed calculations required for protective relay settings.

Homer City Generating Station, Unit 3 - 600 MW Coal-Fired Plant, Pennsylvania Power and Light

Laguna Verde Nuclear Power Station, Units 1 and 2 - 700 MW BWR Reactors, Federal Commission of Electricity, Veracruz, Mexico

GRUMMAN AEROSPACE CORPORATION (1969 to 1973)

As ELECTRONIC ENGINEER, Mr. Hannwacker was responsible for an experimental investigation to determine the optimal location of antennas on aircraft and spacecraft vehicles, using scale model studies. He was also involved in the design, fabrication, and coordination of the production effort for an automated microwave test set utilized for the checkout of airborne radar system.

BROOKHAVEN NATIONAL LABORATORIES (1965 to 1969)

As DEVELOPMENT ENGINEER - "B," Mr. Hannwacker was responsible for the design of RF (radio frequency) structures for the 200 MeV Brookhaven Linear Accelerator, including an automated measurements system utilized to determine the efficiency of the resulting accelerator structures.

FAIRCHILD STRATOS CORPORATION (1960 to 1963)

As SENIOR ELECTRONICS ENGINEER, Mr. Hannwacker was responsible for the design of various radar components, including antennas and ferrite components. Another assignment included development of a compact laser and studies of the propagation of radio waves in the atmosphere.

PRD ELECTRONICS (1956 to 1960)

As ELECTRONIC ENGINEER, he assisted in the development of a self-contained portable ammonia beam oscillator. His duties involved preparing and setting the required microwave and electronic instrumentation for performing studies with the microwave signal produced by the molecular beam oscillator.

SPERRY GYROSCOPE CORPORATION (1955 to 1956)

As ASSISTANT ELECTRONICS ENGINEER, Mr. Hannwacker assisted in the development of a commercial microwave spectrometer for analysis of gaseous mixtures. He also participated in the development of the first coaxial ferrite isolator and a study program for improving microwave ferrite materials.

BEARHAM, FREDERICK

SUPERVISOR OF PROGRAM ASSESSMENT

EDUCATION

Battle High School, Reading, U.K.
Wandsworth Technical College, London, England, Production Engineering
Wimbledon Technical College, London, England, Higher National Certificate - Mechanical Engineering
Boro Polytechnic, London, England - No Degree

EXPERIENCE SUMMARY

Joined Stone & Webster Engineering Corporation in September 1968 as a Designer for piping/mechanical systems layout for the nuclear power stations. In September 1970 assigned to the Beaver Valley Power Station Unit No. 1 as an Assistant Superintendent Field Quality Control and was later transferred to the Boston QA Department as a QA Engineer in the capacity of an Audit Supervisor. In July 1976 assigned as Senior QA Engineer in the Field Quality Control Division responsible for project liaison-procedure review and audit responses. Assigned to the Client Services Group of the Quality Systems Division in January 1977 as a representative to the San Diego Gas & Electric facility at Carlsbad, California. He was assigned as a Quality Assurance Program Administrator for the Millstone Unit 3 Project and is presently assigned to the Cost and Auditing Division as a Lead Auditor.

Prior to joining Stone & Webster, he was employed as a Design Engineer by Atomic Power Construction, Ltd., England, responsible for building, piping and plant layout of gas cooled reactor plants, and with other firms, in a similar capacity, in connection with fossil power plants, natural gas plants and petrochemical installations.

Spent several years in manufacturing as a machinist, set up man and inspector in the aircraft industry.

SIENKIEWICZ, WALTER H. AUDITOR

EDUCATION

Drexel Evening College, Industrial Engineering,
Temple Technical Institute
Drexel University - B.S. in Business Administration, Management
Ultrasonic Testing School
Radiographic Film Interpretation
Liquid Penetrant Inspection
Magnetic Particle Inspection
Qualified Level III Auditor

TECHNICAL SOCIETIES

American Society for Quality Control - Member

EXPERIENCE SUMMARY

Mr. Sienkiewicz joined Stone & Webster in May 1972 as a Procurement Quality Control Inspector. In December 1975, he was appointed to the position of Procurement Quality Control Engineer, which he held until his appointment to the position of Assistant District Chief in October 1976.

Prior to joining Stone & Webster, he had 21 years experience in inspection, supervision, tool engineering, methods engineering, and manufacture of products used extensively in the chemical, food, petroleum, air pollution control, and power producing industries.

His background also includes five years of continuous supervisory experience. He was responsible for setting up a tool and gage calibration program according to MIL Standard Q-9858A and C-45662A. He was also responsible for the Shop Quality Control as specified in the Quality Assurance Manual, and he reported to the Quality Assurance Manager.

He has also had experience in nuclear contracts and inspection requirements (NAVSHIPS 250-1500) and other military standards.

Mr. Sienkiewicz has been involved extensively in the manufacture, Inspection and Testing of virtually all types of valves. Valve types include, but are not limited to Gate, Globe, Butterfly, Non-Reserve Safety and Relief Valves.

DETAILED EXPERIENCE RECORD
SIENKIEWICZ, WALTER H.

STONE & WEBSTER ENGINEERING CORPORATION, PHILADELPHIA, PA (5/72 to Present)

Appointments:

Assistant District manager - October 1976
Procurement Quality Control Engineer - December 1975
Procurement Quality Control Inspector - May 1972

Procurement Quality Assurance Division (5/72 to Present)

As ASSISTANT DISTRICT MANAGER, responsible for assisting the District Manager in the overall activities associated with the Philadelphia District Office.

As PROCUREMENT QUALITY CONTROL ENGINEER, responsible for developing functional district office programs.

As PROCUREMENT QUALITY CONTROL INSPECTOR, ascertained through proper examination and test that equipment and/or material conforms to the requirements of the Stone & Webster Engineering Corporation client purchase order/contract specification and/or drawings, manufacturers' approved drawings, regulatory specification/-codes/standards and approved welding procedures.

SCHUTTE & KOERTING COMPANY, CORNWELLS HEIGHTS, PA (11/67-4/72)

Appointed to position of INSPECTION SUPERVISOR - Duties as INSPECTION SUPERVISOR: Previous to his assumption of this position, there was no calibration and certification of measuring instrument masters or gage laboratory periodic inspection of all shop measuring instruments. All gage laboratory responsibilities were under control and acceptable to MIL-Q-9858A and MIL-C45662A. Responsible for receiving inspection, in-process inspection, nondestructive testing, ultrasonic testing, final and shipping inspection within the company with a group of 12 union men. Responsible for the preventation of government and nuclear component parts and assemblies for inspection by government Quality Control representative.

Appointed to the position of TOOL AND GAGE SUPERVISOR - (10/67-12/69) Duties as TOOL AND GAGE SUPERVISOR - Established a complete tool, gage, fixture, and machine tool inventory in the plant and allocated proper complement of tooling at each machine. Set up a program for the changeover of high speed tooling to standard and special carbine insert tooling for utilization throughout the plant. Responsible for all new tooling, fixturing, troubleshooting, quotations, and purchasing.

WHS

AMERICAN PULLEY COMPANY, PHILADELPHIA, PA (9/51-10/67)

Appointed to the position of METHODS ENGINEER - Drawing review of all new products and listing of all the necessary tooling and fixturing required for manufacturing, along with estimated cost through quotation requests. After management decision to manufacture new products, responsible for having all necessary tooling and fixturing designed by the tool engineer and, after approval, obtaining outside quotations and either purchasing from a tool and die manufacturer or placing the order in the plant Tool & Die Shop for manufacture. Responsible for writing; machine tool process sheets for machining operation requirements, feed, speeds, and tooling requirement to machine parts on a wide variety of metal turning machinery. Responsible for calculations required to manufacture gears on hobbing machines, along with gear shaving and heat treating. Responsible for the backup justification for the purchase of capital machine turning equipment, with quotations and purchase recommendations.

Appointed to the position of ASSISTANT FOREMAN - (6/61-4/62)
Duties as ASSISTANT FOREMAN - Working with the Chief Industrial Engineer setting up a new product line. Assisting the Shop Foreman in the supervision of 40 men in the Assembly Department.

Appointed to the position of MACHINE TOOL SETUP MAN - (7/57-6/61)
Duties as MACHINE TOOL SETUP MAN - Setting up machines for other operators and instruction of operators on the correct operation of machine, such as engine lathes, turpet lathes, vertical turpet lathes, drill presses, milling machines, grinders, and other automatic machinery.

MACHINE TOOL OPERATOR - (9/51-7/57)
Duties as MACHINE TOOL OPERATOR - Operation of all machine tools in the plant for the manufacture of parts for speed reducers, pulleys, pumps, lift trucks, hand trucks, and motor-operated sprayer equipment, etc.

SECTION 3

DEMONSTRATION OF INDEPENDENCE, SIGNED AFFIDAVITS

Stone & Webster will conduct the overview of the Construction Completion Program at the Midland Nuclear Cogeneration Plant in an independent manner. Stone & Webster has a long standing and valued reputation which is based upon the professional integrity and independent judgment of its personnel. The Corporation's commitment to the continuation of such high ethical standards is reflected in its Code of Business Conduct which, of course, applies to the services provided for this program, as well as to any other assignment. In order to further demonstrate that the program will be performed in an independent manner, Stone & Webster has conducted the internal review described below to meet the specific requirements for this program.

3.1 LOCATION OF OFFICES

Overall assessment of the Construction Completion Program will be managed by Stone & Webster Headquarters office in Boston, Massachusetts and will be manned by personnel from the Boston office and, as required, from other offices which are located in Denver, Colorado; New York, New York; Cherry Hill, New Jersey; and Houston, Texas. Stone & Webster does not have an engineering and design office in Michigan.

Stone & Webster believes that the independence of the performance of its services will be enhanced by the remoteness of its offices from those of Consumers Power Company. The distance between offices should diminish the likelihood of outside relationships among employees of both organizations and of individuals having been employed in both organizations.

3.2 INDEPENDENCE OF PERSONNEL

To demonstrate that the professional and technical personnel who will be assigned to the assessment of the Construction Completion Program do not have potential or apparent conflicts of interest, such personnel will be required to sign the statement shown in Figure 3-1. Thus, the personnel assigned to the assessment of the Construction Completion Program will indicate the following:

1. That such personnel have not engaged in any work or business involved with or related to the engineering or design of the Midland Nuclear Cogeneration Plant;

2. That neither such personnel nor any members of their immediate families own any beneficial interest in the Consumers Power Company; and

3. That none of the members of their immediate family are employed by Consumers Power Company.

Immediate family is defined as spouse, children, parents and siblings.

3.3 BUSINESS DEALINGS BETWEEN STONE & WEBSTER AND CONSUMERS POWER COMPANY

Stone & Webster has reviewed its records to determine what work has been performed for Consumers Power Company from January 1, 1978 to February 28, 1983. A list of these jobs is contained in Table 3-1. This work for Consumers Power Company represents a very small portion of Stone & Webster's total business.

In addition to Stone & Webster's business dealings with Consumers Power Company, Stone & Webster records have also been searched to determine if Stone & Webster's affiliated companies, Stone & Webster Management Consultants (SWMCI) and Stone & Webster Appraisal Corporation, have performed any services for Consumers Power Company since January 1, 1978. No such tasks were found.

3.4 HOLDINGS OF CONSUMERS POWER COMPANY SECURITIES

Stone & Webster, Inc., the parent company of Stone & Webster, and its subsidiaries (including Stone & Webster), have no holdings of Consumers Power Company securities. The Employee Savings Plan of Stone & Webster, Incorporated and participating subsidiaries, is administered by The Chase Manhattan Bank, N.A. as trustee. Funds may be invested in the Employee Benefit Investment Funds, Equity Fund of the Chase Manhattan Bank which is a commingled fund. Stone & Webster exercises no direct control over the investment of such funds. The Chemical Bank of New York is trustee for the Employee Retirement Plan of Stone & Webster, Incorporated and participating subsidiaries. There are no Consumers Power Company securities held in the plan.

3.5 SUMMARY

Stone & Webster and its affiliated companies have performed an amount of work for Consumers Power Company over the past five years which represents only a very small portion of Stone & Webster's business. Neither Stone & Webster, Inc. nor any of its subsidiaries own an interest in Consumers Power Company. Stone & Webster's Employee Savings Plan and Retirement Plan are administered by banks as trustees and neither Plan holds Consumers Power Company securities. Also, all key technical personnel who will be assigned to the project will be required to sign the attached disclosure statement (Figure 3-1). We believe that these disclosures and representations should be more than adequate to demonstrate the independence of Stone & Webster's participation in the overview of the Construction Completion Program at the Midland Nuclear Cogeneration Plant.

TABLE 3-1

WORK PERFORMED BY STONE & WEBSTER MICHIGAN, INC., ENGINEERING CORPORATION FOR CONSUMERS POWER COMPANY FROM JANUARY 1, 1978 TO DECEMBER 31, 1982

CPCo Purchase Order No.	Date of Task	Description
12513Q	March 1978-December 1981	Review List of Equipment and Recommend Spare Parts for Midland Station
Contract DTD August 1, 1978	June 1978-June 1980	Prepare Critique Report of Second Outage at Palisades Station and Provide Planning Support
10319	November 1978-June 1980	Procure a Mobile Security Access Module for Outage Work Forces at Palisades
CP10-8408	1979-	Provide Consulting Services for CPCo Plants as Assigned by Production Planning Department
CP10-8509-Q	March 1982-July 1982	Evaluate Midland Site Emergency Plan
CP11-0232-Q	September 1982-	Perform Independent Assessment of Construction Activities Related to Auxiliary Building and Feedwater Isolation Valve Pit Remedial Work at Midland
CP11-0170	October 1982-	Provide Emergency Planning Consulting Services for Big Rock
CP11-0265 CP11-0324 CP11-0353	October 1982-	Perform Vibration Analysis on Boiler Feed Pump at J. H. Campbell Unit 3 and Recommend Corrective Action
CP10-9945	October 1982-	Provide Services and Materials to coordinate 1983-1984 Palisades Refueling Outage

CPCo Purchase Order No.	Date of Task	Description
CP11-0529	January 1983-	Provide Services and Materials to Assist in Planning 1983-1984 Palisades Refueling Outage
CP12-1450	January 1983-	Provide Services to Enhance Midland Operations Integration Plan
CP11-0684	March 1983-	Material Management Support to Midland (Follow-up to previous spare parts work, 12513Q)

FIGURE 3-1

STATEMENT REGARDING POTENTIAL OR APPARENT CONFLICTS OF INTEREST

To: Stone & Webster Engineering Corporation

Whereas, the undersigned employee ("Employee") understands that he or she is being considered as a participant to provide services to Consumers Power Company with respect to the overview of the Construction Completion Program at the Midland Nuclear Cogeneration Plant and

Whereas, Employee understands that it is necessary that proposed participants be screened for any potential or apparent conflicts of interest with respect to this assignment;

Therefore, for the above stated purposes Employee makes the following representations to Stone & Webster Engineering Corporation:

1. Employee has not engaged in any work or business involved with or related to the engineering or design of the Midland Nuclear Cogeneration Plant;

2. Neither Employee, nor any members of his or her immediate family, own any beneficial interest in the Consumers Power Company, including but not limited to common or preferred stock, bonds or other securities issued on behalf of the Consumers Power Company; and

3. None of the members of Employee's immediate family are employed by Consumers Power Company.

This statement is based upon the Employee's best information and belief and any exceptions to the representations contained herein have been described on the reverse side of this document.

Dated March 25, 1983

Signature Joseph Hannwacker

JOSEPH HANNWACKER
Print Name

FIGURE 3-1

STATEMENT REGARDING POTENTIAL OR APPARENT CONFLICTS OF INTEREST

To: Stone & Webster Engineering Corporation

Whereas, the undersigned employee ("Employee") understands that he or she is being considered as a participant to provide services to Consumers Power Company with respect to the overview of the Construction Completion Program at the Midland Nuclear Cogeneration Plant and

Whereas, Employee understands that it is necessary that proposed participants be screened for any potential or apparent conflicts of interest with respect to this assignment;

Therefore, for the above stated purposes Employee makes the following representations to Stone & Webster Engineering Corporation:

1. Employee has not engaged in any work or business involved with or related to the engineering or design of the Midland Nuclear Cogeneration Plant;

2. Neither Employee, nor any members of his or her immediate family, own any beneficial interest in the Consumers Power Company, including but not limited to common or preferred stock, bonds or other securities issued on behalf of the Consumers Power Company; and

3. None of the members of Employee's immediate family are employed by Consumers Power Company.

This statement is based upon the Employee's best information and belief and any exceptions to the representations contained herein have been described on the reverse side of this document.

Dated 3/25/83

Signature Albert A. Smith

ALBERT A. SMITH
Print Name

FIGURE 3-1

STATMENT REGARDING POTENTIAL OR APPARENT CONFLICTS OF INTEREST

To: Stone & Webster Engineering Corporation

Whereas, the undesigned employee ("Employee") understands that he or she is being considered as a participant to provide services to Consumers Power Company with respect to the overview of the Construction Completion Program at the Midland Nuclear Cogeneration Plant and

Whereas, Employee understands that it is necessary that proposed participants be screened for any potential or apparent conflicts of interest with respect to this assignment;

Therefore, for the above stated purposes Employee makes the following representations to Stone & Webster Engineering Corporation:

1. Employee has not engaged in any work or business involved with or related to the engineering or design of the Midland Nuclear Cogeneration Plant;

2. Neither Employee, nor any members of his or her immediate family, own any beneficial interest in the Consumers Power Company, including but not limited to common or preferred

stock, bonds or other securities issued on behalf of the Consumers Power Company; and

3. None of the members of Employee's immediate family are employed by Consumers Power Company.

This statement is based upon the Employee's best information and belief and any exceptions to the representations contained herein have been described on the reverse side of this document.

Dated 3-28-83

Signature Richard S. Scallan

Richard S. Scallan
Print Name

FIGURE 3-1

STATMENT REGARDING POTENTIAL OR APPARENT CONFLICTS OF INTEREST

To: Stone & Webster Engineering Corporation

Whereas, the undesigned employee ("Employee") understands that he or she is being considered as a participant to provide services to Consumers Power Company with respect to the overview of the Construction Completion Program at the Midland Nuclear Cogeneration Plant and

Whereas, Employee understands that it is necessary that proposed participants be screened for any potential or apparent conflicts of interest with respect to this assignment;

Therefore, for the above stated purposes Employee makes the following representations to Stone & Webster Engineering Corporation:

1. Employee has not engaged in any work or business involved with or related to the engineering or design of the Midland Nuclear Cogeneration Plant;

2. Neither Employee, nor any members of his or her immediate family, own any beneficial interest in the Consumers Power Company, including but not limited to common or preferred

stock, bonds or other securities issued on behalf of the Consumers Power Company; and

3. None of the members of Employee's immediate family are employed by Consumers Power Company.

This statement is based upon the Employee's best information and belief and any exceptions to the representations contained herein have been described on the reverse side of this document.

Dated 3/25/83

Signature /s/ WMackay

WILLIAM MACKAY
Print Name

FIGURE 3-1

STATMENT REGARDING POTENTIAL OR APPARENT CONFLICTS OF INTEREST

To: Stone & Webster Engineering Corporation

Whereas, the undesigned employee ("Employee") understands that he or she is being considered as a participant to provide services to Consumers Power Company with respect to the overview of the Construction Completion Program at the Midland Nuclear Cogeneration Plant and

Whereas, Employee understands that it is necessary that proposed participants be screened for any potential or apparent conflicts of interest with respect to this assignment;

Therefore, for the above stated purposes Employee makes the following representations to Stone & Webster Engineering Corporation:

1. Employee has not engaged in any work or business involved with or related to the engineering or design of the Midland Nuclear Cogeneration Plant;

2. Neither Employee, nor any members of his or her immediate family, own any beneficial interest in the Consumers Power Company, including but not limited to common or preferred

stock, bonds or other securities issued on behalf of the Consumers Power Company; and

3. None of the members of Employee's immediate family are employed by Consumers Power Company.

This statement is based upon the Employee's best information and belief and any exceptions to the representations contained herein have been described on the reverse side of this document.

Dated 3/25/83

Signature N B Cleveland

N. B. Cleveland
Print Name

FIGURE 3-1

STATMENT REGARDING POTENTIAL OR APPARENT CONFLICTS OF INTEREST

To: Stone & Webster Engineering Corporation

Whereas, the undesigned employee ("Employee") understands that he or she is being considered as a participant to provide services to Consumers Power Company with respect to the overview of the Construction Completion Program at the Midland Nuclear Cogeneration Plant and

Whereas, Employee understands that it is necessary that proposed participants be screened for any potential or apparent conflicts of interest with respect to this assignment;

Therefore, for the above stated purposes Employee makes the following representations to Stone & Webster Engineering Corporation:

1. Employee has not engaged in any work or business involved with or related to the engineering or design of the Midland Nuclear Cogeneration Plant;

2. Neither Employee, nor any members of his or her immediate family, own any beneficial interest in the Consumers Power Company, including but not limited to common or preferred

stock, bonds or other securities issued on behalf of the Consumers Power Company; and

3. None of the members of Employee's immediate family are employed by Consumers Power Company.

This statement is based upon the Employee's best information and belief and any exceptions to the representations contained herein have been described on the reverse side of this document.

Dated 3-24-83

Signature W D. Miller

W. D. MILLER
Print Name

FIGURE 3-1

STATMENT REGARDING POTENTIAL OR APPARENT CONFLICTS OF INTEREST

To: Stone & Webster Engineering Corporation

Whereas, the undesigned employee ("Employee") understands that he or she is being considered as a participant to provide services to Consumers Power Company with respect to the overview of the Construction Completion Program at the Midland Nuclear Cogeneration Plant and

Whereas, Employee understands that it is necessary that proposed participants be screened for any potential or apparent conflicts of interest with respect to this assignment;

Therefore, for the above stated purposes Employee makes the following representations to Stone & Webster Engineering Corporation:

1. Employee has not engaged in any work or business involved with or related to the engineering or design of the Midland Nuclear Cogeneration Plant;

2. Neither Employee, nor any members of his or her immediate family, own any beneficial interest in the Consumers Power Company, including but not limited to common or preferred

stock, bonds or other securities issued on behalf of the Consumers Power Company; and

3. None of the members of Employee's immediate family are employed by Consumers Power Company.

This statement is based upon the Employee's best information and belief and any exceptions to the representations contained herein have been described on the reverse side of this document.

Dated Mar. 25, 1983

Signature Gm Schierberg

G. M. SCHIERBERG
Print Name

FIGURE 3-1

STATMENT REGARDING POTENTIAL OR APPARENT CONFLICTS OF INTEREST

To: Stone & Webster Engineering Corporation

Whereas, the undesigned employee ("Employee") understands that he or she is being considered as a participant to provide services to Consumers Power Company with respect to the overview of the Construction Completion Program at the Midland Nuclear Cogeneration Plant and

Whereas, Employee understands that it is necessary that proposed participants be screened for any potential or apparent conflicts of interest with respect to this assignment;

Therefore, for the above stated purposes Employee makes the following representations to Stone & Webster Engineering Corporation:

1. Employee has not engaged in any work or business involved with or related to the engineering or design of the Midland Nuclear Cogeneration Plant;

2. Neither Employee, nor any members of his or her immediate family, own any beneficial interest in the Consumers Power Company, including but not limited to common or preferred

stock, bonds or other securities issued on behalf of the Consumers Power Company; and

3. None of the members of Employee's immediate family are employed by Consumers Power Company.

This statement is based upon the Employee's best information and belief and any exceptions to the representations contained herein have been described on the reverse side of this document.

Dated 3/28/83

Signature J C Thompson

JAMES C THOMPSON
Print Name

FIGURE 3-1

STATMENT REGARDING POTENTIAL OR APPARENT CONFLICTS OF INTEREST

To: Stone & Webster Engineering Corporation

Whereas, the undersigned employee ("Employee") understands that he or she is being considered as a participant to provide services to Consumers Power Company with respect to the overview of the Construction Completion Program at the Midland Nuclear Cogeneration Plant and

Whereas, Employee understands that it is necessary that proposed participants be screened for any potential or apparent conflicts of interest with respect to this assignment;

Therefore, for the above stated purposes Employee makes the following representations to Stone & Webster Engineering Corporation:

1. Employee has not engaged in any work or business involved with or related to the engineering or design of the Midland Nuclear Cogeneration Plant;

2. Neither Employee, nor any members of his or her immediate family, own any beneficial interest in the Consumers Power Company, including but not limited to common or preferred

stock, bonds or other securities issued on behalf of the Consumers Power Company; and

3. None of the members of Employee's immediate family are employed by Consumers Power Company.

This statement is based upon the Employee's best information and belief and any exceptions to the representations contained herein have been described on the reverse side of this document.

Dated March 30 1983

Signature F Beardsley

FRED. BEARDSLEY

Print Name

FIGURE 3-1

STATMENT REGARDING POTENTIAL OR APPARENT CONFLICTS OF INTEREST

To: Stone & Webster Engineering Corporation

Whereas, the undesigned employee ("Employee") understands that he or she is being considered as a participant to provide services to Consumers Power Company with respect to the overview of the Construction Completion Program at the Midland Nuclear Cogeneration Plant and

Whereas, Employee understands that it is necessary that proposed participants be screened for any potential or apparent conflicts of interest with respect to this assignment;

Therefore, for the above stated purposes Employee makes the following representations to Stone & Webster Engineering Corporation:

1. Employee has not engaged in any work or business involved with or related to the engineering or design of the Midland Nuclear Cogeneration Plant;

2. Neither Employee, nor any members of his or her immediate family, own any beneficial interest in the Consumers Power Company, including but not limited to common or preferred

stock, bonds or other securities issued on behalf of the Consumers Power Company; and

3. None of the members of Employee's immediate family are employed by Consumers Power Company.

This statement is based upon the Employee's best information and belief and any exceptions to the representations contained herein have been described on the reverse side of this document.

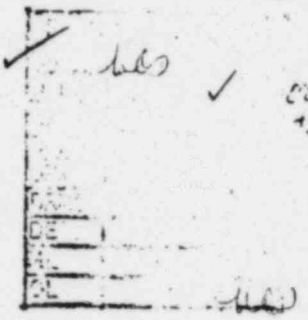
Dated April 1, 1983

Signature M Giannattasio

M. GIANNATTASIO

Print Name

Harrison
Barane
Landsman



STONE & WEBSTER MICHIGAN, INC.

P.O. BOX 2325, BOSTON, MASSACHUSETTS 02107

Mr. J. G. Keppler
Administrator, Region III
U.S. Nuclear Regulatory Commission
799 Roosevelt Road
Glen Ellyn, IL 60137

April 11, 1983

J.O. No. 14358

RE: DOCKET NO. 50-329-330
MIDLAND PLANT - UNITS 1 AND 2
THIRD PARTY CONSTRUCTION
IMPLEMENTATION OVERVIEW

Stone & Webster Michigan, Inc. has determined that the Corporation and the individual members of the proposed Third Party Construction Implementation Overview Team satisfy the requirements for independence.

In particular it has been determined that the Corporation and team members satisfy the following criteria:

- The Corporation or individuals proposed for this work do not have any direct previous involvement with Midland activities that they will be reviewing.
- The Corporation or individuals proposed for this work have not been previously hired by the Owner to perform design, engineering, construction or quality work relative to the Construction Completion Program.
- The individuals proposed for this work do not have present household members employed by the Owner.
- The individuals proposed for this work do not have any relative employed by the Owner in a management capacity.
- The Corporation and individual proposed for this work do not control a significant amount of Owner stock.

8304180536

APR 13 1983

APR 13 1983

Attached are signed affidavits for each proposed member of the Team. If you have any questions, please contact Mr. C. F. Sundstrom at (617) 589-2780.

P. A. Wild
Vice President

Sworn and subscribed to before me on this 11th day of April, 1983.

Notary Public
Suffolk County Massachusetts
My Commission Expires January 23, 1987

cc: H. R. Denton, NRC (w/att)

Figure 3-1

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

In the Matter of
CONSUMERS POWER COMPANY
(Midland Plant, Units 1 and 2)

Docket No. 50-329 OM
50-330 OM
Docket No. 50-329 OL
50-330 OL

April 1, 1983

AFFIDAVIT OF W. MACKAY

My name is W. MACKAY. I am employed by Stone & Webster Engineering Corporation as PROGRAM MANAGER.

I am currently assigned to the team which is proposed to conduct a Third Party Construction Implementation Overview at the Midland Nuclear Plant site. Prior to being given this assignment, I have never worked on any job or task associated with the Midland Project, or any job or task for or on behalf of Consumers Power Company or Bechtel relating to issues that I will be reviewing. I have never been employed by Consumers Power Company or Bechtel. I do not own any shares of Consumers Power Company or Bechtel stock. Mutual funds or other funds in which I may have a beneficial interest, but over which I have no control, may own shares of Consumers Power Company or Bechtel stock, of which I am unaware. A list of such funds in which I have an interest are attached. I have no relatives which are or have been employed by Consumers Power Company or Bechtel.

Signed W. Mackay.

Sworn and Subscribed Before Me This 8 Day of April 1983

Suzanne M. Battelle
Notary Public

My Commission Expires My Commission Expires May 5, 1989

Figure 3-1

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

In the Matter of
CONSUMERS POWER COMPANY
(Midland Plant, Units 1 and 2)

Docket No. 50-329 OM
50-330 OM
Docket No. 50-329 OL
50-330 OL

April 1, 1983

AFFIDAVIT OF C.O. Richardson

My name is C.O. Richardson. I am employed by Stone & Webster Engineering Corporation as Engineering Manager.

I am currently assigned to the team which is proposed to conduct a Third Party Construction Implementation Overview at the Midland Nuclear Plant site. Prior to being given this assignment, I have never worked on any job or task associated with the Midland Project, or any job or task for or on behalf of Consumers Power Company or Bechtel relating to issues that I will be reviewing. I have never been employed by Consumers Power Company or Bechtel. I do not own any shares of Consumers Power Company or Bechtel stock. Mutual funds or other funds in which I may have a beneficial interest, but over which I have no control, may own shares of Consumers Power Company or Bechtel stock, of which I am unaware. A list of such funds in which I have an interest are attached. I have no relatives which are or have been employed by Consumers Power Company or Bechtel.

Signed C.O. Richardson

Sworn and Subscribed Before Me This 7th Day of April 1983

Lisanne M. Battikha
Notary Public

My Commission Expires My Commission Expires May 5, 1989

Figure 3-1

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

In the Matter of
CONSUMERS POWER COMPANY
(Midland Plant, Units 1 and 2)

Docket No. 50-329 OM
50-330 OM
Docket No. 50-329 OL
50-330 OL

April 1, 1983

AFFIDAVIT OF N. B. CLEVELAND

My name is N. B. CLEVELAND. I am employed by Stone & Webster Engineering Corporation as DEPUTY DIRECTOR OF CONSTRUCTION.

I am currently assigned to the team which is proposed to conduct a Third Party Construction Implementation Overview at the Midland Nuclear Plant site. Prior to being given this assignment, I have never worked on any job or task associated with the Midland Project, or any job or task for or on behalf of Consumers Power Company or Bechtel relating to issues that I will be reviewing. I have never been employed by Consumers Power Company or Bechtel. I do not own any shares of Consumers Power Company or Bechtel stock. Mutual funds or other funds in which I may have a beneficial interest, but over which I have no control, may own shares of Consumers Power Company or Bechtel stock, of which I am unaware. A list of such funds in which I have an interest are attached. I have no relatives which are or have been employed by Consumers Power Company or Bechtel.

Signed N. B. Cleveland

Sworn and Subscribed Before Me This 7 Day of April 1983

Susanne M. Battuello
Notary Public

My Commission Expires May 5, 1979

My Commission Expires _____

Figure 3-1

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

In the Matter of
CONSUMERS POWER COMPANY
(Midland Plant, Units 1 and 2)

Docket No. 50-329 OM
50-330 OM
Docket No. 50-329 OL
50-330 OL

April 1, 1983

AFFIDAVIT OF G. M. SCHIERBERG

My name is G. M. SCHIERBERG. I am employed by Stone & Webster Engineering Corporation as MANAGER, PROCUREMENT QUALITY ASSURANCE.

I am currently assigned to the team which is proposed to conduct a Third Party Construction Implementation Overview at the Midland Nuclear Plant site. Prior to being given this assignment, I have never worked on any job or task associated with the Midland Project, or any job or task for or on behalf of Consumers Power Company or Bechtel relating to issues that I will be reviewing. I have never been employed by Consumers Power Company or Bechtel. I do not own any shares of Consumers Power Company or Bechtel stock. Mutual funds or other funds in which I may have a beneficial interest, but over which I have no control, may own shares of Consumers Power Company or Bechtel stock, of which I am unaware. A list of such funds in which I have an interest are attached. I have no relatives which are or have been employed by Consumers Power Company or Bechtel.

Signed G. M. Schierberg

Sworn and Subscribed Before Me This 7 Day of April 1983

Susanne M. Battikha
Notary Public

My Commission Expires

My Commission Expires May 5, 1987

Figure 3-1

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

In the Matter of
CONSUMERS POWER COMPANY
(Midland Plant, Units 1 and 2)

Docket No. 50-329 OM
50-330 OM
Docket No. 50-329 OL
50-330 OL

April 1, 1983

AFFIDAVIT OF M. GIANNATTASIO

My name is M. GIANNATTASIO. I am employed by Stone & Webster Engineering Corporation as ASST. CHIEF ELECTRICAL ENGINEER.

I am currently assigned to the team which is proposed to conduct a Third Party Construction Implementation Overview at the Midland Nuclear Plant site. Prior to being given this assignment, I have never worked on any job or task associated with the Midland Project, or any job or task for or on behalf of Consumers Power Company or Bechtel relating to issues that I will be reviewing. I have never been employed by Consumers Power Company or Bechtel. I do not own any shares of Consumers Power Company or Bechtel stock. Mutual funds or other funds in which I may have a beneficial interest, but over which I have no control, may own shares of Consumers Power Company or Bechtel stock, of which I am unaware. A list of such funds in which I have an interest are attached. I have no relatives which are or have been employed by Consumers Power Company or Bechtel.

Signed M. Giannattasio

Sworn and Subscribed Before Me This 7 Day of April 1983

Suzanne M. Battistella
Notary Public

My Commission Expires My Commission Expires May 5, 1989

Figure 3-1

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	Docket No. 50-329 OM
CONSUMERS POWER COMPANY	50-330 OM
(Midland Plant, Units 1 and 2)	Docket No. 50-329 OL
	50-330 OL

April 1, 1983

AFFIDAVIT OF E. A. LONG

My name is E. A. LONG. I am employed by Stone & Webster Engineering Corporation as ASSISTANT ENGINEERING MANAGER.

I am currently assigned to the team which is proposed to conduct a Third Party Construction Implementation Overview at the Midland Nuclear Plant site. Prior to being given this assignment, I have never worked on any job or task associated with the Midland Project, or any job or task for or on behalf of Consumers Power Company or Bechtel relating to issues that I will be reviewing. I have never been employed by Consumers Power Company or Bechtel. I do not own any shares of Consumers Power Company or Bechtel stock. Mutual funds or other funds in which I may have a beneficial interest, but over which I have no control, may own shares of Consumers Power Company or Bechtel stock, of which I am unaware. A list of such funds in which I have an interest are attached. I have no relatives which are or have been employed by Consumers Power Company or Bechtel.

Signed Eugene A. Long

Sworn and Subscribed Before Me This 7 Day of April 1983

Susanne M. Battikha
Notary Public

My Commission Expires My Commission Expires May 5, 1986

Figure 3-1

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

In the Matter of
CONSUMERS POWER COMPANY
(Midland Plant, Units 1 and 2)

Docket No. 50-329 OM
50-330 OM
Docket No. 50-329 OL
50-330 OL

April 1, 1983

AFFIDAVIT OF JAMES CAVELL THOMPSON

My name is James Cavell Thompson. I am employed by Stone & Webster Engineering Corporation as Superintendent of FQC.

I am currently assigned to the team which is proposed to conduct a Third Party Construction Implementation Overview at the Midland Nuclear Plant site. Prior to being given this assignment, I have never worked on any job or task associated with the Midland Project, or any job or task for or on behalf of Consumers Power Company or Bechtel relating to issues that I will be reviewing. I have never been employed by Consumers Power Company or Bechtel. I do not own any shares of Consumers Power Company or Bechtel stock. Mutual funds or other funds in which I may have a beneficial interest, but over which I have no control, may own shares of Consumers Power Company or Bechtel stock, of which I am unaware. A list of such funds in which I have an interest are attached. I have no relatives which are or have been employed by Consumers Power Company or Bechtel.

Signed J C Thompson

Sworn and Subscribed Before Me This 7th Day of April 1983

Elizabeth T Chetney
Notary Public

Elizabeth T. Chetney #4632[illegible]
Notary Public - State of New York
County of Oswego
My Commission Expires March 30, 1984

My Commission Expires _____

Figure 3-1

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

In the Matter of
CONSUMERS POWER COMPANY
(Midland Plant, Units 1 and 2)

Docket No. 50-329 OM
50-330 OM
Docket No. 50-329 OL
50-330 OL

April 1, 1983

AFFIDAVIT OF W. D. MILLER

My name is W.D. Miller. I am employed by Stone & Webster Engineering Corporation as Inspection Supervisor.

I am currently assigned to the team which is proposed to conduct a Third Party Construction Implementation Overview at the Midland Nuclear Plant site. Prior to being given this assignment, I have never worked on any job or task associated with the Midland Project, or any job or task for or on behalf of Consumers Power Company or Bechtel relating to issues that I will be reviewing. I have never been employed by Consumers Power Company or Bechtel. I do not own any shares of Consumers Power Company or Bechtel stock. Mutual funds or other funds in which I may have a beneficial interest, but over which I have no control, may own shares of Consumers Power Company or Bechtel stock, of which I am unaware. A list of such funds in which I have an interest are attached. I have no relatives which are or have been employed by Consumers Power Company or Bechtel.

Signed W D Miller

Sworn and Subscribed Before Me This 8th Day of April 1983

Notary Public

My Commission Expires [illegible]

Rick SCALLOW

B3-4220700-LP249J

1-1

Figure 3-1

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	Docket No. 50-329 OM
CONSUMERS POWER COMPANY	50-330 OM
(Midland Plant, Units 1 and 2)	Docket No. 50-329 OL
	50-330 OL

April 1, 1983

AFFIDAVIT OF Richard S. Scallan

My name is Richard S Scallan. I am employed by Stone & Webster Engineering Corporation as ~~Senior~~ Q.C. Inspector.

I am currently assigned to the team which is proposed to conduct a Third Party Construction Implementation Overview at the Midland Nuclear Plant site. Prior to being given this assignment, I have never worked on any job or task associated with the Midland Project, or any job or task for or on behalf of Consumers Power Company or Bechtel relating to issues that I will be reviewing. I have never been employed by Consumers Power Company or Bechtel. I do not own any shares of Consumers Power Company or Bechtel stock. Mutual funds or other funds in which I may have a beneficial interest, but over which I have no control, may own shares of Consumers Power Company or Bechtel stock, of which I am unaware. A list of such funds in which I have an interest are attached. I have no relatives which are or have been employed by Consumers Power Company or Bechtel.

Signed Richard S Scallan

Sworn and Subscribed Before Me This 6th Day of April 1983

William Carl Simons
Notary Public

My Commission Expires at death

Figure 3-1

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

In the Matter of
CONSUMERS POWER COMPANY
(Midland Plant, Units 1 and 2)

Docket No. 50-329 OM
50-330 OM
Docket No. 50-329 OL
50-330 OL

April 1, 1983

AFFIDAVIT OF J. R. LANGSTON

My name is J.R. LANGSTON. I am employed by Stone & Webster Engineering Corporation as INSPECTION SUPERVISOR.

I am currently assigned to the team which is proposed to conduct a Third Party Construction Implementation Overview at the Midland Nuclear Plant site. Prior to being given this assignment, I have never worked on any job or task associated with the Midland Project, or any job or task for or on behalf of Consumers Power Company or Bechtel relating to issues that I will be reviewing. I have never been employed by Consumers Power Company or Bechtel. I do not own any shares of Consumers Power Company or Bechtel stock. Mutual funds or other funds in which I may have a beneficial interest, but over which I have no control, may own shares of Consumers Power Company or Bechtel stock, of which I am unaware. A list of such funds in which I have an interest are attached. I have no relatives which are or have been employed by Consumers Power Company or Bechtel.

Signed J.R. Langston

Sworn and Subscribed Before Me This 8TH Day of April 1983

Jacqueline A. Ivone
Notary Public

JACQUELINE A. IVONE
NOTARY PUBLIC, State of New York
No. 31IV4601469, Suffolk County
Term Expires March 30, 1984

My Commission Expires 3-30-84

Figure 3-1

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

In the Matter of
CONSUMERS POWER COMPANY
(Midland Plant, Units 1 and 2)

Docket No. 50-329 OM
50-330 OM
Docket No. 50-329 OL
50-330 OL

April 1, 1983

AFFIDAVIT OF Albert A. Smith

My name is Albert A. Smith. I am employed by Stone & Webster Engineering Corporation as Control Systems Engineer.

I am currently assigned to the team which is proposed to conduct a Third Party Construction Implementation Overview at the Midland Nuclear Plant site. Prior to being given this assignment, I have never worked on any job or task associated with the Midland Project, or any job or task for or on behalf of Consumers Power Company or Bechtel relating to issues that I will be reviewing. I have never been employed by Consumers Power Company or Bechtel. I do not own any shares of Consumers Power Company or Bechtel stock. Mutual funds or other funds in which I may have a beneficial interest, but over which I have no control, may own shares of Consumers Power Company or Bechtel stock, of which I am unaware. A list of such funds in which I have an interest are attached. I have no relatives which are or have been employed by Consumers Power Company or Bechtel.

Signed Albert A. Smith

Sworn and Subscribed Before Me This 1st Day of April 1983

Philip J. Talamo
Notary Public

PHILIP J. TALAMO
Notary Public, State of New York
No. 52-3927175
Qualified in Suffolk County

My Commission Expires Commission Expires March 30, 1985

Figure 3-1

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

In the Matter of
CONSUMERS POWER COMPANY
(Midland Plant, Units 1 and 2)

Docket No. 50-329 OM
50-330 OM
Docket No. 50-329 OL
50-330 OL

April 1, 1983

AFFIDAVIT OF J. HANNWACKER

My name is JOSEPH HANNWACKER. I am employed by Stone & Webster Engineering Corporation as ELECTRICAL ENGINEER.

I am currently assigned to the team which is proposed to conduct a Third Party Construction Implementation Overview at the Midland Nuclear Plant site. Prior to being given this assignment, I have never worked on any job or task associated with the Midland Project, or any job or task for or on behalf of Consumers Power Company or Bechtel relating to issues that I will be reviewing. I have never been employed by Consumers Power Company or Bechtel. I do not own any shares of Consumers Power Company or Bechtel stock. Mutual funds or other funds in which I may have a beneficial interest, but over which I have no control, may own shares of Consumers Power Company or Bechtel stock, of which I am unaware. A list of such funds in which I have an interest are attached. I have no relatives which are or have been employed by Consumers Power Company or Bechtel.

Signed Joseph Hannwacker

Sworn and Subscribed Before Me This 4TH Day of April 1983

Felix J. Colangelo
Notary Public

FELIX J. COLANGELO
Notary Public, State of New York
No. 30-4766212
Qualified in Nassau County
Commission Expires March 30, 1984

My Commission Expires MARCH 30, 1984

Figure 3-1

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	Docket No. 50-329 OM
CONSUMERS POWER COMPANY	50-330 OM
(Midland Plant, Units 1 and 2)	Docket No. 50-329 OL
	50-330 OL

April 1, 1983

AFFIDAVIT OF F. BEARHAM

My name is FRED BEARHAM. I am employed by Stone & Webster Engineering Corporation as QA. ENGINEER.

I am currently assigned to the team which is proposed to conduct a Third Party Construction Implementation Overview at the Midland Nuclear Plant site. Prior to being given this assignment, I have never worked on any job or task associated with the Midland Project, or any job or task for or on behalf of Consumers Power Company or Bechtel relating to issues that I will be reviewing. I have never been employed by Consumers Power Company or Bechtel. I do not own any shares of Consumers Power Company or Bechtel stock. Mutual funds or other funds in which I may have a beneficial interest, but over which I have no control, may own shares of Consumers Power Company or Bechtel stock, of which I am unaware. A list of such funds in which I have an interest are attached. I have no relatives which are or have been employed by Consumers Power Company or Bechtel.

Signed F. Bearham

Sworn and Subscribed Before Me This 8TH Day of April 1983

Jacqueline A. Moore
Notary Public

JACQUELINE A. [illegible]
NOTARY PUBLIC, State of New York
No. 01[illegible]4661469, Suffolk County
Term Expires March 30, 1984

My Commission Expires 3-30-84

Figure 3-1

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	Docket No. 50-329 OM
CONSUMERS POWER COMPANY	50-330 OM
(Midland Plant, Units 1 and 2)	Docket No. 50-329 OL
	50-330 OL

April 1, 1983

AFFIDAVIT OF W.H. Sienkiewicz

My name is W.H. Sienkiewicz. I am employed by Stone & Webster Engineering Corporation as Assistant District Manager, PQA.

I am currently assigned to the team which is proposed to conduct a Third Party Construction Implementation Overview at the Midland Nuclear Plant site. Prior to being given this assignment, I have never worked on any job or task associated with the Midland Project, or any job or task for or on behalf of Consumers Power Company or Bechtel relating to issues that I will be reviewing. I have never been employed by Consumers Power Company or Bechtel. I do not own any shares of Consumers Power Company or Bechtel stock. Mutual funds or other funds in which I may have a beneficial interest, but over which I have no control, may own shares of Consumers Power Company or Bechtel stock, of which I am unaware. A list of such funds in which I have an interest are attached. I have no relatives which are or have been employed by Consumers Power Company or Bechtel.

Signed Walter H. Sienkiewicz

Sworn and Subscribed Before Me This 5 Day of April 1983

Alma R. Willits
Notary Public

ALMA R. WILLITS, Notary Public
Northampton Twp., Bucks Co.
My Commission Expires March 14, 1986

My Commission Expires _____

STONE & WEBSTER MICHIGAN, INC.

P.O. BOX 2325, BOSTON, MASSACHUSETTS 02107

PRINCIPAL STAFF			
NRR	✓		
D/NRR		✓	
A/NRR			
DERP			
DRMA		✓	
DRMSP			
DE			
ML			
OL		FILE	✓

Mr. J. G. Keppler
Administrator, Region III
U.S. Nuclear Regulatory Commission
799 Roosevelt Road
Glen Ellyn, Il 60137

May 19, 1983

RE: DOCKET NO. 50-329-330
MIDLAND PLANT - UNITS 1 AND 2
THIRD PARTY CONSTRUCTION
IMPLEMENTATION OVERVIEW

Stone & Webster Michigan, Inc., forwarded to your attention on April 11, 1983 resumes and signed affidavits for most of its proposed team members. Signed affidavits for Messrs. S. B. Baranow and J. Chawla were not available at that time.

In accordance with the direction provided to Mr. C. F. Sundstrom of our offices on April 6, 1983 by Mr. James Miller, the two missing affidavits are now being forwarded to you.

Mr. Baranow is replacing Mr. W. MacKay and Mr. Chawla is replacing Mr. J. Hannwacker.

If you have any questions, please contact Mr. C. F. Sundstrom at (617) 589-2780.

Very truly yours,

P. A. Wild
Vice President

Enclosures

8305240273

MAY 20 1983

Figure 3-1

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	Docket No. 50-329 OM
CONSUMERS POWER COMPANY	50-330 OM
(Midland Plant, Units 1 and 2)	Docket No. 50-329 OL
	50-330 OL

AFFIDAVIT OF S.W. BARANOW

My name is S.W. BARANOW. I am employed by STONE & WEBSTER ENGINEERING CORPORATION as ASST MANAGER FQC.

I am currently assigned to the team which is proposed to conduct a Third Party Construction Implementation Overview at the Midland Nuclear Plant site. Prior to being given this assignment, I have never worked on any job or task associated with the Midland Project, or any job or task for or on behalf of Consumers Power Company or Bechtel relating to issues that I will be reviewing. I have never been employed by Consumers Power Company or Bechtel. I do not own any shares of Consumers Power Company or Bechtel stock. Mutual funds or other funds in which I may have a beneficial interest, but over which I have no control, may own shares of Consumers Power Company or Bechtel stock, of which I am unaware. A list of such funds in which I have an interest are attached. I have no relatives which are or have been employed by Consumers Power Company or Bechtel.

Signed S.W. Baranow

Sworn and Subscribed Before Me This 27TH Day of APRIL, 1983

Ronald J. Kowalski
Notary Public
RONALD J. KOWALSKI
Notary Public, State of New York
Qualified in Onondaga County
No. 4733996
My Commission Expires 1985

My Commission Expires MARCH 30, 1985

April 1983

BARANOW, STANLEY W

ASSISTANT FIELD QUALITY MANAGER
FIELD QUALITY CONTROL

EDUCATION

Lowell Textile Institute
International Correspondence School - Civil Engineering

EXPERIENCE SUMMARY

Mr. Baranow joined Stone & Webster in July 1948 as an instrument man with the Construction Department. Since that time, his assigned responsibilities ranged from this position to Construction Engineer on various foreign and domestic heavy construction projects, including fossil fired plants, EHV transmission lines and substations, hydrocarbon recovery and petrochemical plants, paper mills, oil pipe lines, and nuclear power plants.

Mr. Baranow joined the Quality Assurance Department in November 1968 as a Senior Quality Control Engineer on the Maine Yankee Atomic Power Plant project.

He was appointed to the position of Superintendent, FQC, in July 1973 in the construction of Gaseous and Liquid Waste Gas Modifications for Connecticut Yankee Atomic Power Plant.

He was appointed to the position of Senior Superintendent, FQC, Boston in March, 1974. He was responsible for project liaison, coordinating field activities, planning, estimating, and manpower scheduling for current and future projects.

He was appointed to the position of Assistant Manager, FQC, Boston, in August, 1976. He is responsible for the control and direction of Quality Control activities at four nuclear plants. He is also responsible for project liaison, coordinating office and field activities, planning, estimating, calibration, and manpower scheduling for current and future jobs.

In February 1979, he was placed on a special temporary assignment as QA Manager, Plant #2, Hahn & Clay, Houston, Texas, responsible for the administration of all quality control activities involved in the fabrication of steam generator supports and pump supports for the Beaver Valley #2 Nuclear Power Station.

In January 1983, he was placed on a special temporary assignment as Assistant Field Quality Manager responsible for all quality aspects of the installation of the PGCC Boards.

Prior to joining Stone & Webster, Mr. Baranow had two years' experience in the construction of a huge warehouse facility with associated railroad work.

DETAILED EXPERIENCE RECORD
BARANOW, STANLEY W. 03456

STONE & WEBSTER ENGINEERING CORPORATION, BOSTON, MA (July 1948 to present)

Appointments:

Assistant Field Quality Manager - January 1983
Quality Assurance Program Administrator - September 1982
Quality Assurance Manager - Sept 1980 Special Assignment, Canada
Quality Assurance Manager - Feb 1979 Special Assignment, Texas
Assistant Field Quality Control Manager - Aug 1976
Senior Superintendent Field Quality Control - Mar 1974
Superintendent Field Quality Control - Feb 1973
Senior Quality Control Engineer - Nov 1968
Division Engineer - Aug 1966
Construction Engineer - July 1963

Special Assignment - Nine Mile Pt. 2 Nuclear Power Station (Jan 1983 to Present)

As Assistant Field Quality Manager, responsible for determining Quality needs during installation and modification of PGCC Boards.

Special Assignment - Diablo Canyon Nuclear Power Station (Sept 1982-Dec 1982)

As the Quality Assurance Program Administrator responsible for the scoping and managing the independent review of both the civil and mechanical contractors on site. Participated in the preparation of the final report.

Special Assignment - Pt. Lepreau, New Brunswick, Canada (Sept 1980-Sept 1982)

As QA MANAGER, responsible for administration of Quality Assurance verification activities during the commissioning (pre-operational) testing and acceptance of safety related systems prior to turnover to operations.

Participated in the development of the operations Quality Assurance Manual and implementing procedures.

Special Assignment Hahn & Clay, Houston, TX (Feb 1979-Aug 1980)

As QA MANAGER, Plant 2, responsible for administration of Quality Control activities involved in the fabrication of steam generator supports and pump supports for the Beaver Valley No. 2 Nuclear Power Station.

Quality Control Division (Nov 1968-Feb 1979)

As ASSISTANT FIELD QUALITY MANAGER (Aug 1976-Feb 1979), responsible for control and direction of Quality Control activities at four nuclear power plants, project liaison, coordinating office and field activities, planning, estimating, calibration, and manpower scheduling.

As SENIOR SUPERINTENDENT, FQC (Mar 1974-Aug 1976), duties same as above.

As SUPERINTENDENT, FQC (Feb 1973-Mar 1974), was responsible for the administration of Quality Control activities in the construction of a gaseous and liquid waste gas modification plant for Connecticut Yankee Atomic Power Plant.

As SENIOR QC ENGINEER (Nov 1968-Nov 1972), was responsible for administration of Quality Control activities in the construction of an 860 MWe PWR atomic power plant for Maine Yankee Atomic Power Company.

Construction Department (Feb 1950-Aug 1968)

As DIVISION ENGINEER (Aug 1966-Aug 1968), was responsible for the construction of off-site facilities at a petro-chemical complex for Nocil, Thane, India. Facilities included substation, administration building, Polyvinyl plant, cooling tower, and yard work.

As CONSTRUCTION ENGINEER (July 1963-Aug 1966), was responsible for construction of EHV 500 Kv substation and erection of transmission line towers for Virginia Power & Light Company.

As SENIOR FIELD ENGINEER (Sept 1959-July 1963), was assigned the following responsibilities:

Field engineering activities in the construction of a fossil fired unit for Sierra Pacific Power Company (Nov 1962-July 1963)

Field engineering activities and inspections of contractors activities in the construction of a 110 Kv transmission line and substations for Puget Sound Power & Light Co. (Jan 1960-Nov 1962)

Monitoring of contractors construction activities, verifying scheduling, and progress in the construction of liquified petroleum gas lines for Mid-America Pipe Line.

As CHIEF FIELD ENGINEER (May 1958-May 1959), responsible for field engineering activities and supervision of construction of 69 Kv transmission lines, substations, and new city and town distribution systems for the Corporacion Dominicana de.Electricidad, Santa Domingo.

As FIELD ENGINEER (Jun 1952-Jun 1956), responsibilities included the following:

Field engineering activities in the construction of the turbine building and cooling towers for Gulf States Utilities. (Sep 1955-Jun 1956)

Field engineering activities in the construction of a digestor building, white liquor building, and conveyor systems for Great Northern Paper Mill. (Feb 1954-Sept 1955)

Field engineering activities in the construction of a fossil fired unit for Niagara Mohawk Power Corporation. (Feb 1953-Feb 1954)

Field engineering activities and inspections of construction activities of a fossil fired unit for Columbia Southern Chemical Corporation. (Jun 1952-Feb 1953)

As Concrete Inspector (May 1950-Jun 1952), responsible for batch plant operations, delivering and placing concrete, records, as-built drawings for Tennessee Gas Transmission Company.

As Instrument Man (Apr 1950-May 1950), responsible for performing hydrological surveys for Union Carbide.

In July 1948, joined SWEC as an Instrument Man responsible for power plant and fermenter's building layout and construction for Pabst Brewery.

HARRY SHEEHAN P.E., PORTSMOUTH, NH (Mar 1948-July 1948)

As FIELD ENGINEER, was responsible for conducting topographical surveys on approximately 26 miles of city streets for future installation of a sewer system.

ABERTHAW CONSTRUCTION CO., NASHUA, NH (Mar 1946-Mar 1948)

Responsible for layout of warehouse complex and railroad facilities.

U. S. Army (Nov 1940-Nov 1945)

Figure 3-1

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

In the Matter of
CONSUMERS POWER COMPANY
(Midland Plant, Units 1 and 2)

Docket No. 50-329 OM
50-330 OM
Docket No. 50-329 OL
50-330 OL

April 1, 1983

AFFIDAVIT OF J. P. Chawla

My name is J. P. Chawla. I am employed by Stone & Webster Engineering Corporation as Designer, Electrical Division.

I am currently assigned to the team which is proposed to conduct a Third Party Construction Implementation Overview at the Midland Nuclear Plant site. Prior to being given this assignment, I have never worked on any job or task associated with the Midland Project, or any job or task for or on behalf of Consumers Power Company or Bechtel relating to issues that I will be reviewing. I have never been employed by Consumers Power Company or Bechtel. I do not own any shares of Consumers Power Company or Bechtel stock. Mutual funds or other funds in which I may have a beneficial interest, but over which I have no control, may own shares of Consumers Power Company or Bechtel stock, of which I am unaware. A list of such funds in which I have an interest are attached. I have no relatives which are or have been employed by Consumers Power Company or Bechtel.

Signed _____

Sworn and Subscribed Before Me This 7th Day of April 1983

_____
Notary Public

PHILIP J. TALAMO
Notary Public, State of New York
No. 52-3927175
Qualified in Suffolk County

My Commission Expires Commission Expires March 30, 1985

April 1983

CHAWLA, JATINDER

DESIGNER
ELECTRICAL DIVISION

EDUCATION

Higher Secondary School, New Delhi, India - Majored in Science
Intermediate School, New Delhi, India - Diploma in Electro-Mechanical Drafting
SWEC FQC Training Workshop Seminar - Feb 1983

EXPERIENCE SUMMARY -

Mr. Chawla joined Stone & Webster Engineering Corporation (SWEC) in November 1980 as a Designer. He has worked on the ECRs and E&DCR for different systems.

Since October 1982, Mr. Chawla has been assigned to James A. FitzPatrick Nuclear Power Plant, where he is working on the different conduit plans/ sections as per field marked-up prints.

Mr. Chawla is also working on the wiring drawings of different panels, e.g., annunciator panels, multiplexures, relay cabinets, etc., and on vendor drawings to incorporate the changes per "as-built" conditions of Fire Direction System.

From November 1980 to October 1982, Mr. Chawla was assigned to Wisconsin Electric Power Company, Point Beach Nuclear Plant, Units 1 and 2. His principal duties were the following:

Design and layout of conduits and trays in computer room - floor and ceiling plans - sections and details, control room, cable spreading room and containment areas.

Routing of safety and non-safety cables in conduits and trays.

Preparation and checking of block diagrams, riser diagrams, connection diagrams, bill of material, cable schedules, conduit schedules and tray schedules, pull tickets, termination tickets, etc.

Calculation of tray and conduit fills, and sizing of junction boxes and pull boxes.

Selection of supports, seismically qualified for conduits and trays.

Review of vendor drawings.

DETAILED EXPERIENCE RECORD
CHAWLA, JATINDER 13794

STONE & WEBSTER ENGINEERING CORPORATION, NEW YORK, N.Y. (Nov 1980 to Present)

Appointments:

Designer

James A. FitzPatrick Nuclear Power Plant, Power Authority of the State of New York (Oct. 1982 to Present)

As DESIGNER, Mr. Chawla works on conduit plans/sections as per field marked-up prints.

Point Beach Nuclear Plant, Units 1 and 2, Wisconsin Electric Power Co. (Nov 1980 to Oct 1982)

He worked on design and layouts of conduits, routing of safety and non-safety cables, preparation of block diagrams, and review of vendor drawings.

AMERICAN ELECTRIC POWER SERVICES CORPORATION (1978 to 1980)

As SENIOR-DRAFTSMAN (ELECTRICAL), Mr. Chawla worked at the Donald C. Cook Nuclear Power Station. He designed and drafted the cable trays and conduits for power, control, and instruments; did design changes as per Nuclear Regulatory Commission Bulletin's requirements; and was responsible for cable and conduit scheduling (computerized, as well as manual) and trough contents.

Mr. Chawla was also assigned to the 1300 MW Mountaineer Coal Fired Power Plant. He developed and drafted single-line tray diagrams (4 kV, 600 V power, and control). He was responsible for the physical layout of electrical equipment and devices in control centers, 4 kV switchgear, etc. Mr. Chawla also drafted front views of MCCs switchgears, dc panels, and miscellaneous power panels; worked on underground ductwork and installation of cables in manholes; and was associated with design and development of coal handling stations and conveyors. Mr. Chawla routed cables and conduits with computerized system; reviewed structural, mechanical, and vendor drawings; and prepared Bill of Materials.

CENTRAL ELECTRICITY AUTHORITY, NEW DELHI, INDIA (1965 to 1978)

As SENIOR DRAFTSMAN, Mr. Chawla was assigned to the Giri H.E. Project and Rana Pratap Sagar H.E. Project. He worked on layout and drafted cable trays and cable trench network, layout of electrical equipment in power house control rooms, auxiliary, etc.

JC

Mr. Chawla worked on 132 kV switchyard and associated electrical yard work. He worked on miscellaneous details of various supporting structures for electrical and mechanical devices.

He coordinated design drafting work with other departments, prepared Bill of Materials, and reviewed manufacturer's drawings.

T-391

STONE & WEBSTER	QCI NO. 10.01	REV. 1	DATE 6/27/83	PREPARED BY J.C. Thompson
	DIVISION FQC		LOCATION MNPP	
QUALITY CONTROL INSTRUCTION	APPLICABILITY N/A		APPROVED BY S.W. Barrow 6/27/83	
	RE: PROCEDURE N/A			
	SUBJECT CONSTRUCTION IMPLEMENTATION OVERVIEW ASSESSMENT			

1.0 PURPOSE AND SCOPE

1.1 To establish a program for management planning, conducting and documenting the Construction Implementation Overview (CIO) assessment of the Construction Completion Program (CCP). This QCI shall be applicable to all phases of the CCP and may cover additonal activities as directed by the SWEC Program Manager.

2.0 REFERENCES

2.1 SWEC Third Party Construction Implementation Overview Procedure 5/19/83

2.2 SWEC Project Quality Assurance Plan

2.3 Construction Completion Program

3.0 ATTACHMENTS

3.1 Evaluation Checklist (Sample)

3.2 Verification Checklist (Sample)

4.0 GENERAL

4.1 This CIO program shall assure proper implementation of the CCP through a systemmatic assessment of procedures, instructions, directives, correspondence, specifications, drawings and commitments as applicable. Assessment shall confirm conformance in the development, approvals and implementation of the CCP and shall encompass program evaluation and physical verification.

4.2 CIO shall provide for the evaluation of the CCP in a planned and systematic manner, i.e., prepare schedules for preparation of checklists, develop checklists applicable to specific Project Quality Control Instructions (PQCI) and perform evaluations of documented inspections/activities.

4.3 CIO shall use the checklists to perform evaluations and/or verification of the documented inspection or activity.

4.4 Results of assessments shall be documented in accordance with Section 6 of this QCI .

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5.0 RESPONSIBILITIES

5.1 The Program Manager is responsible for:

- Implementation and control of the overview of the CCP activities
- Evaluating compliance and effectiveness of the program
- Approval of checklists
- Participating in Management Reviews
- Preparation of reports of progress and nonconformances for presentation to the US NRC and CPCo
- Documenting those meetings and telephone conversations that pertain to the CCP

5.2 The Evaluation Supervisor shall be responsible for:

- Developing checklists comprised of attributes based upon activities described in PQCI's, commitments and other project directives.
- Maintaining and up-dating checklist matrices
- Directing the implementation of the Evaluation Program

5.3 The Verification Supervisor shall be responsible for:

- Developing checklists comprised of attributes based upon activities described in PQCI's, commitments and other project directives
- Maintaining and up-dating checklist matrices
- Directing the implementation of the Physical Verification Program

6.0 PROCEDURE

6.1 Evaluation/Verification shall be performed in accordance with the following instructions:

6.1.1 Attribute checklists shall be prepared utilizing the PQCI and appropriate additional data. Attribute checklists may include direction for information and guidance to the evaluator. Attributes shall be numbered sequentially, shall be clear, concise, without ambiguity and shall indicate the precise source of the attribute by page and paragraph. In addition the source data shall address any of the 18 criteria of 10CFR50 Appendix B as applicable. The CPCo team number shall be indicated in the "Responsible Organization" Column.

6.1.2 Review referenced documents, including correspondence, procedures, and inspection records pertinent to the CCP.

6.1.3 Complete the checklist attribute sheets during the assessment by entering the total number of observations made of each attribute and the number of observations found unsatisfactory, noting any remarks under "Comments". Remarks shall contain sufficient information to ensure repeatability of the observation. This information shall include identification of specifications, drawing procedures, reports, test results and nonconforming conditions and shall include copies of supporting documentation as necessary. Attributes determined to be not applicable shall be marked "N/A" and explained.

6.1.4 Each attribute noted as unsatisfactory shall be evaluated by the Program Manager to determine if the unsatisfactory observation warrants the issuance of a Nonconformance Identification Report (NIR).

6.1.5 Checklists with attributes noted as unsatisfactory that do not result in the issuance of an NIR shall be kept in an active file until reinspection determined that the attribute is considered satisfactory.

6.1.6 The checklist attribute sheets shall be considered as a guide for performing assessments. Attributes maybe modified or added or deleted (with explanation) as necessary to satisfy the objectives of References 2.1 and 2.2.

7.0 Records

7.1 Upon completion of all activities asssociated with a specific PQCI, the completed package (with copies of NIRs) shall be transmitted to CPCo Permanent Plant Files.

7.2 CIO shall maintain a working file of all documentation transmitted to CPCo Permanent Plant Files. This file maybe used for reference or review by the US NRC.

STONE AND WEBSTER MICHIGAN INC

MIDLAND ENERGY CENTER PROJECT

EVALUATION ATTRIBUTE CHECKLIST

ATTRIBUTE CHECKLIST N°	TITLE	REV	DATE
PQCI N°/REFERENCE	TITLE	REV	DATE

This Attribute Checklist shall be completed in accordance with the following procedures.

Stone & Webster Quality Ass ..ice Plan Third Party CIO procedure.

QCI 10.01 Construction Implementation Overview Assessment
QCI 15.01 Nonconformance Identification Report

S.W. Baranow
Program Manager

Attribute Checklist prepared by SIGN DATE

Checklist Approved by SIGN DATE

Checklist Completed by SIGN DATE

Completed Checklist Approved SIGN DATE

Attachment 3.1

STONE AND WEBSTER MICHIGAN INC

MIDLAND ENERGY CENTER PROJECT

VERIFICATION ATTRIBUTE CHECKLIST

ATTRIBUTE CHECKLIST N°	TITLE	REV	DATE
PQCI N°/REFERENCE	TITLE	REV	DATE

This Attribute Checklist shall be completed in accordance with the following procedures.

Stone & Webster Quality Assurance Plan Third Party CIO procedure.

QCI 10.01 Construction Implementation Overview Assessment
QCI 15.01 Nonconformance Identification Report

S.W. Baranow
Program Manager

Attribute Checklist prepared by SIGN DATE

Checklist Approved by SIGN DATE

Checklist Completed by SIGN DATE

Completed Checklist Approved SIGN DATE

Attachment 3.2

ATTRIBUTE CHECKLIST

ITEM NO.	ATTRIBUTES	RESP. ORG.	OBSERVATIONS		COMMENTS
			NO. CKD.	NO. UNSAT.	

T-090-3 ATTRIBUTE CHECKLIST N° _____ (CONTINUATION SHEET)

PAGE ___ OF ____

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STONE & WEBSTER	QCI NO. 15.01	REV. 1	DATE 8/5/83	PREPARED BY F. Bearham
	DIVISION EQC		LOCATION MNPP	
QUALITY CONTROL INSTRUCTION	APPLICABILITY N/A		APPROVED BY S W Barnard 8/5/83	
	RE: PROCEDURE N/A			
	SUBJECT NONCONFORMANCE IDENTIFICATION AND REPORTING			

1.0 PURPOSE

1.1 To describe the system for initiating, processing, distributing and controlling Nonconformance Identification Reports (NIR), documenting field nonconformances.

2.0 SCOPE

This instruction applies to nonconformances identified by Construction Implementation Overview (CIO) personnel during evaluation and verification of activities associated with the implementation of Phase I and Phase II of the Construction Completion Program (CCP).

3.0 REFERENCES

3.1 SWEC Third Party Construction Implementation Overview May 19, 1983

3.2 SWEC Project Quality Assurance Plan, Rev. 1, August 5, 1983

3.3 Processing of CIO Deficiencies, N-6 Rev. 1, June 17, 1983

4.0 ATTACHMENTS

4.1 Nonconformance Identification Report (NIR)

4.2 Instructions for completion of the NIR report

4.3 NIR Log Summary

5.0 DEFINITIONS

5.1 Nonconformance - A deficiency in characteristic, documentation or procedure which renders the quality of an item unacceptable or indeterminate. Examples of nonconformance include: Physical defects, test failures, incorrect or inadequate documentation, or deviation from prescribed processings, inspection or test procedure.

6.0 PROCEDURE

6.1 Nonconformances that are observed by(CIO)personnel and determined to have been previously identified by Consumers Power Company (CPCo.) or their Contractors shall not be reported.

Note - Previously reported nonconformances will normally be identified by number on the Quality Control Inspection Records (QCIR) which are attachments to Project Quality Control Instructions (PQCI).

6.2 Nonconformances which have not been previously identified by CPCo or their Contractors shall be reported on a Nonconformance Identification Report (NIR).

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6.3 NIRs shall be evaluated for potential reportability under 10CFR 50.55e and/or 10CFR Part 21 by the Program Manager. The Program Manager shall transmit to CPCo a copy of the NIR and a brief explanation outlining the reason(s) why it should be evaluated by CPCo.

6.4 Upon concurrence by the Program Manager, the original shall be transmitted to CPCo for processing in accordance with MPQAD procedure N-6, "Processing of Construction Implementation Overview Deficiencies." A copy of the NIR shall be transmitted to NRC site representative for information. Copies of NIRs shall remain in the CIO files for tracking purposes.

6.5 The Program Manager shall maintain communication with CPCo to determine when resolutions of nonconformances are accomplished.

6.6 Upon notification from CPCo that the nonconformance has been resolved, (CIO) personnel shall verify that corrective actions have been accomplished. After verification, the NIR shall be closed with a brief description of the corrective action accomplished and shall signify concurrence by signing and dating the NIR.

6.7 If the corrective action is considered to be unsatisfactory, the iniatator shall issue a new NIR which shall be processed in accordance with paragraph 6.4.

6.8 A weekly report showing the status of NIRs shall be sent to the US NRC with a copy to CPCo.

7.0 RECORDS

7.1 Closed NIRs shall be distributed as follows:

- Original of NIR and MPQAD NCR to CPCo permanent plant files
- One copy to US NRC
- One copy to CIO files

7.2 Other records shall be distributed as follows:

- Originals of completed summary logs to CPCo permanent plant files

STONE AND WEBSTER ENGINEERING CORPORATION

NONCONFORMANCE IDENTIFICATION REPORT

QCI 15.01
Attachment 4.1

DATE OF NONCONFORMANCE: NIR NUMBER

IDENTIFICATION/LOCATION OF ITEMS:

DESCRIPTION OF NONCONFORMANCE:

	CONCURRENCE	REPORTABILITY
INIATIATOR DATE	PROGRAM MGR DATE	10CFR 50.55e Yes ☐ NO ☐ 10CFR PART 21 YES ☐ NO ☐

CORRECTIVE ACTION BY:

IDENTIFY ORGANIZATION TAKING CORRECTIVE ACTION

CONCURRENCE SAT UNSAT INIATIATOR DATE	NEW NIR# DATE	CONCURRENCE PROGRAM MGR DATE

REMARKS

Instructions for Completion of a Nonconformance Identification Report

Number - Enter next sequential number obtained from file.

Date - Enter date observation was made.

Identification/Location of Item - Use name and serial, mark or heat number, etc., or other description of items affected by the nonconformances.

Description of Nonconformance - Reference documents and requirements and explain manner in which they are violated. Include any pertinent physical condition (dimensions, test reports, damages, etc).

Initiator - Signature of Construction Implementation Overview Team member making observation.

Date - Enter data of report.

Program Management Concurrence - Signature of the Program Manager or his disignee signifying concurrence with issue of the NIR.

Corrective Action - Describe action taken by CPCo. or their Contractors to correct nonconformance. Include any appropriate report numbers, specification changes and/or methods of repair, etc.

Initiator Concurrence - Signature of Construction Implementation Overview Team member reporting and concurring with corrective action.

Program Management Concurrence - Signature of the Program Manager or his disignee signifying concurrence with closure of the NIR.

Date - Enter date NIR is closed.

STONE & WEBSTE HIGAN, INC.
NIR LOG S..ARY

NIR NO.	MPQAD NCR NO.	SUBJECT	DATE OF ISSUE	DATE DISP.	DATE CLOSED	COMMENTS/STATUS REP. NO.

QCI 15.01
ATTACHMENT 4.3

J.O.No. 14509
Midland Plant Units 1 & 2

Date August 1, 1983
Revision 1

THIRD PARTY CONSTRUCTION IMPLEMENTION OVERVIEW
Approval:

Richard B Kelly Date 8/3/83
Manager Quality Assurance

S W Burwell Date 8/5/83
Program Manager

1.0 PURPOSE AND SCOPE

To establish a program whereby Stone & Webster Engineering Corporation (SWEC) performs independent evaluations and verifications of the Consumers Power Company (CPCo) Construction Completion Program, (CCP) reports progress, observations, and nonconformances to the program; specifically, to verify that: 1

1.1 Management performance is adequate in the following areas:

A. Establishment of the Management Review Committee

B. Duties and responsibilities of the Review Committee are clearly defined

C. Procedures governing the actions of the Review Committee are in place

D. Management reviews are complete, effective, and conducted in accordance with the requirements of the CCP Program

1.2 CCP procedures, instructions, inspection plans, records, and prerequisites for inspections/reinspections have been satisfactorily approved prior to implementation.

1.3 Specific CPCo commitments to the NRC are identified to facilitate tracking; dates for compliance (as appropriate) are adequately identified; appropriate action parties are clearly identified; committed actions have been satisfactorily resolved.

1.4 Procedures, prerequisites, and reinspection attributes in References 2.1, 2.2 and 2.3 have been approved by the Management Review Committee.

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1.5 Personnel assigned to implement the CCP Program have been properly trained, qualified and certified in accordance with the requirements of ANSI-N45.2.6; SNT-TC-1A and MPQAD Procedure B-3M-1, Qualification and Certification of Inspection and Test Personnel. Construction and craft personnel shall be trained to meet the requirements of the Construction Training Procedure FPG-2.000.

1.6 The effectiveness of the Quality Verification Program based on witnesing inspections/reinspections of selected component installation, fabrication and review of applicable test/inspection reports and records.

1.7 Measures have been developed to ensure that NRC hold points are clearly identified and controls are in evidence to prevent continuance of work pending clearance of the hold points.

2.0 REFERENCES

2.1 Quality Verification Program Document, April 16, 1983

2.2 Construction Completion Program

a. Letters J.W. Cook to the NRC: January 10, 1983
April 6, 1983
April 22, 1983

2.3 Nonconformance Identification and Reporting Procedure

3.0 ATTACHMENTS

3.1 Evaluation Attribute Checklist (Later)

3.2 Verification Attribute Checklist (Later)

3.3 Nonconformance Inspection Report (Later)

4.0 DEFINITIONS

4.1 Construction Completion Program (CCP)

A program to provide guidance in planning and management of design and quality activities necessary for completion of construction of the plant and verification of completed work.

4.2 Quality Verification Program (QVP)

An element of the CCP used to confirm the quality status of safety related procurement and construction activities completed and inspected by the Engineer-Constructor personnel prior to December 2, 1982.

4.3 Evaluation

Assessment of quality related activities based upon review of procedures, plans, instructions, inspection reports, test results and additional committments.

NOTE

Documentation resulting from resolution of CPCo committments to the NRC and NRC Hold Points shall be 100% reviewed to verify that proper corrective action has been accomplished.

4.4 Verification

Confirming, substantiating or assuring that CCP and QVP requirements have been implemented and are active, verification actions may include documentation, hardware and management systems.

NOTE

Activities performed by CPCo under the CCP and QVP Programs will be monitored using random sampling techniques. The sampling will be based on a review of day to day activities in sufficient detail to ensure adequate implementation of the programs.

5.0 GENERAL REQUIREMENTS

5.1 All personnel assigned quality assurance program evaluation responsibilities shall be certified auditors in accordance with ANSI-N45.2.23 and applicable SWEC procedures.

5.2 All personnel assigned construction verification responsibilities shall be certified inspectors in accordance with ANSI-N45.2.6 and applicable SWEC procedures and possess the appropriate combination of education, experience and training.

5.3 The Third Party Construction Implementation Overview (CIO) program will be structured to determine, by evaluation of predetermined procedures and instructions, the quality practices utilized in the construction of the Midland Plant Units 1, 2, and the effectiveness of those practices.

5.4 A site team will be established to monitor the effectiveness of the Construction Completion Program. The team will consist of a Program Manager and two functional groups. One group will assess the completeness of compliance with procedures and inspection plans being used to complete the work. The other group will review certain aspects of construction activities which relate to the performance of the Quality Control Inspection Program. These two gropus will use special procedures, checklists, and random sampling techniques to evaluate the following:

A. Adequacy and implementation of CPCo procedures regarding construction activities, personnel qualification, training programs, and organizational practices.

B. Compliance of Construction Completion Program teams to prescribed procedures.

C. Compliance of Midland Project Quality Assurance (MPQAD) personnel to applicable procedures.

D. Compliance of construction activities to applicable procedures.

5.5 The Program Manager shall maintain communications with the NRC and CPCo Site Manager. Weekly progress meetings shall be held with the NRC and CPCo to discuss progress and report on nonconformance and observations.

5.6 Programmatic nonconformances of a serious nature shall be immediately reported to the NRC and CPCo.

6.0 PROCEDURES

6.1 The following procedures shall be prepared to control the activities of the Construction Implementation Overview (CIO) teams.

A. Quality Control Instruction 10.01 Construction Implementation Overview Assessment

6.2 The site teams shall develop attribute checklists for each evaluation and verification activity. Attributes shall be selected from the CCP, PQCI's, CPCo committments to the NRC and other applicable requirements.

6.3 Auditors assigned to conduct evaluations shall, utilizing checklists, itemize those quality practices evident in the performance of each activity.

The results of each evaluation shall be documented on the checklist to ensure repeatability. Summaries of the results shall be tabulated weekly for presentation to the NRC and CPCo.

6.4 Inspectors assigned to conduct verification, shall utilizing the checklist, monitor the activities of CPCo personnel involved in CCP and QVP activities.

6.5 All systems verified shall be identified and documented to assure repeatability.

6.6 Nonconformances identified in conjunction with this procedure shall be documented on a Nonconformance Inspection Report (NIR) and processed in accordance with Reference 2.3 of this procedure. 1

7.0 REPORTS

7.1 The following reports will be submitted to NRC and CPCo and SWEC by the Program Manager.

A. Weekly Progress Reports

B. Final Reports on Construction Completion

7.2 Weekly Progress Report - Weekly Progress Reports will be submitted during the weekly meeting with CPCo, and the NRC.

7.3 Final Report - A final report will be submitted 30 days after completion of the program. The report will summarize the SWEC assessment. The final report will be submitted by the Program Manager to the NRC, CPCo and SWEC.