STONE & WEBSTER MICHIGAN, INC.

P.O. BOX 2325, BOSTON, MASSACHUSETTS 02107

Mr. James R. Miller
799 Roosevelt Road
Glen Ellyn, IL 60137

April 28, 1983

THIRD PARTY CONSTRUCTION IMPLEMENTATION OVERVIEW
MIDLAND NUCLEAR COGENERATION PLANT -
CONSUMER POWER COMPANY

Dear Mr. Miller:

In accordance with your earlier discussion with Mr. Carl F. Sundstrom, I am forwarding the resumes' of Mr. Stanley W. Baranow who will be replacing Mr. W. MacKay and Mr. Jatinder Chawla who will be replacing Mr. J. Hannwacker.

I will forward the signed affidavits from each of these new individuals to you within the next couple of days.

If you have any questions or require any assistance, please call Mr. Carl F. Sundstrom at (617) 589-2780.

Very truly yours,

P. A. Wild
Vice President

cc: J. W. Cook - CPC
D. B. Miller - CPC

November 1982

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

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 Electiic 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.

Selectien 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 DESIGNER-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 1979)

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.

April 1983

BARANOW, STANLEY W

ASSISTANT FIELD QUALITY MANAGER
FIELD QUALITY CONTROL

EDUCATION

Lowell Textile Institute
International Correspondence School - Civil Engineering

EXPERINECE 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 Atom . 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.

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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.

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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.

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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.

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Monitoring of contractors construction activities, verifying scheduling, and progress in the construction of liquified petroleum gas lines for Mid-America Pipe Line.

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As FIELD ENGINEER (Jun 1952-Jun 1956), responsibilities included the following:

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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)

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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)

Davis

DRAFT
04/08/83
10:00 a.m.

Docket No. 50-358

Cincinnati Gas and Electric
Company
ATTN: W. H. Dickhoner, President
139 East 4th Street
Cincinnati, OH 45201

Gentlemen:

By letter dated March 7, 1983, you proposed that Torrey Pines Technology (TPT) be retained as the independent organization to conduct the review of CG&E's management of the Zimmer project required by Section IV.B(1)(a) of the Commission's November 12, 1982 Order. Supplemental information in support of this request was provided by TPT letters to you dated March 18, 22, and April 5, 1983, and to J. A. Vennemann dated April 5, 1983.

We find the proposal to use TPT for this assignment to be acceptable and to be consistent with the independence and competence criteria outlined in the Commission's letter of February 1, 1982 to Congressmen Ottinger and Dingell. However, TPT's review should not start until NRC approves the scope and certain details of the management review. In order for us to complete our review as expeditiously as possible, we wish to meet with TPT to be briefed

in detail on TPT's plans for the management review. This meeting will be held in Cincinnati and be open to public observation. We will be available to meet with TPT on April 22 or 25, 1983.

Enclosure 1 provides our evaluation of your proposal to use Torrey Pines Technology to conduct the review of the management of the Zimmer project.

Sincerely,

James G. Keppler

Regional Administrator

Enclosure: As stated

Cincinnati Gas and Electric

Company

cc w/encl:
Mr. Earl A. Borgman, Senior
Vice President
J. R. Schott, Plant
Superintendent
J. D. Flynn, Manager
Licensing Environmental
Affairs Department
DMB/Document Control Desk (RIDS)
Resident Inspector, RIII
Harold W. Kohn, Power
Siting Commission
Citizens Against a Radioactive
Environment
Helen W. Evans, State of Ohio
Robert M. Quillin, Ohio
Department of Health
Thomas Applegate
Thomas Devine, Associate
Director, Institute for
Policy Studies
Dave Martin, Office of
Attorney General
Mark Wetterhahn, Esq.
Jerome A. Vennemann, Esq.
Gretchen Hummel, Ohio
Consumers' Counsel
James R. Williams, State
Liaison Officer, Ohio
Disaster Services Agency

RIII	RIII	RIII	RIII	IE	NRR	ELD
Warnick/sv 04/07/83	Lewis	Davis	Keppler			

Enclosure 1

DRAFT

04/08/83

10:05 a.m.

Staff Evaluation of Cincinnati Gas & Electric Co.
Proposal to Use Torrey Pines Technology to Conduct
the Review of the Management of the Zimmer Project
in Accordance with Section IV.B(1)(a) of the
Commission's November 12, 1982 Order

Purpose and Background

The purpose of this document is to provide an evaluation of the Cincinnati Gas and Electric Company's (CG&E) March 7, 1983 response to Section IV.B(1)(a) of the Commission's November 12, 1982 Order to Show Cause and Order Immediately Suspending Construction (CLI-82-33). The Order requires CG&E to take the following steps:

1. Obtain an independent review of its management of the Zimmer project, including its quality assurance and quality verification programs, to determine measures needed to ensure that construction of the facility can be completed in conformance with the Commission's regulations and the construction permit. (Section IV.B(1)(a)).

2. Based upon the independent review, make recommendations to the Administrator of NRC Region III concerning the management of the project. (Section IV.B(1)(b)).

3. Submit to the Regional Administrator an updated comprehensive plan to verify the quality of construction of the facility. (Section IV.B(2)(a)).

4. Submit to the Regional Administrator a comprehensive plan, based on the results of the verification program, for the continuation of construction. (Section IV.B(2)(b)).

This evaluation relates only to the approval of CG&E's proposal for an outside organization to conduct the independent management review under Section IV.B.(1)(a). That provision makes the selection of the independent management review subject to the approval of the Regional Administrator. CG&E initially requested approval of the Bechtel Power Corporation to conduct reviews under both Sections IV.B.(1) and IV.B.(2) of the Order and stated its intention to use Bechtel as a joint project manager for completion of construction. However, in view of the Commission's February 18, 1983 decision that Bechtel should not perform the roles of both independent management reviewer and joint project manager, CG&E has proposed that Torrey Pines Technology (TPT) be responsible for the independent management review.

CG&E's Proposed Independent Reviewer

CG&E has proposed that TPT, a subsidiary of GA Technologies, Inc. (GA), perform an independent management review of the Zimmer project in accordance

with Section IV.B(1)(a) of the Commission's November 12, 1982 Order. The NRC Staff has considered CG&E's submittal of March 7, 1983, TPT's and CG&E's responses to Region III questions, written public comments, and the clarification of submitted comments and additional comments received at a public meeting held in Cincinnati on March 28, 1983. In considering CG&E's proposal, the Staff has used as guidance the letter of February 1, 1982 from Chairman Palladino to Congressmen Ottinger and Dingell, which sets forth the "competence" and "independence" standards that have been applied by the Commission in determining the acceptability of proposed third-party reviewers.

TPT's Competence

The Staff has considered the qualifications of both the TPT/GA organization and the individuals proposed as team members to conduct the independent review of CG&E's management of the Zimmer project. Input to the Staff's review included the information supplied in CG&E's submittal, the responses to the Staff's inquiries and the Staff's existing knowledge of TPT's performance at other nuclear power plants, and information from members of the public as to TPT's competence.

The Staff has reviewed TPT's and GA's experience in assessing the management of nuclear construction projects, particularly its performance in independent reviews of design, construction, and quality assurance undertaken for utilities

as input to the NRC's operating license reviews (Palo Verde, Waterford and San Onofre)[1]. TPT's reviews have entailed evaluation of the management performance of the utilities involved. The staff has evaluated these reviews, and found them to be competent and thorough.

The Staff has also reviewed the qualifications of the key persons proposed for the project, as set forth in the March 7, 1983 submittal, and has concluded that the team has significant stated experience in QA/QC matters, nuclear plant construction, and management systems. These are the skills which we find necessary to carry out the independent management review required under Section IV.B(1)(a) of the Order. Through reference checks and/or discussions with NRC Staff members familiar with the key personnel, we have verified their experience and competence in these areas.

Based upon its review, the Staff concludes that the TPT organization and the individual review team members are competent to conduct the independent management review, and meet the technical competence standards set forth in the Ottinger/Dingell letter.

[1] It should be noted that TPT conducted an independent review of the Shoreham project for Long Island Lighting Company. Since this effort was not conducted under the NRC staff's auspices, it was not reviewed by the NRC; therefore, it was not considered in this evaluation.

Enclosure 1

DRAFT

04/08/83

10:05 a.m.

TPT's Review Program

TPT's proposed detailed outline and scope for its management review of Zimmer will need to be submitted to CG&E and the Staff, and approved by the NRC, prior to the initiation of the review at Zimmer. The Staff plans to hold a meeting with TPT specifically to obtain additional information from TPT regarding their proposed program. This meeting will be open for public observation.

Summary and Conclusion

Based on our review of the documentation submitted by CG&E and TPT, followup checks, and consideration of oral and written comments of members of the public, we conclude that TPT meets the independence and competence criteria for third party reviewers.

Enclosure 1

DRAFT

04/08/83

10:05 a.m.

TPT Independence

The Staff believes that for an organization to be acceptable to conduct this verification program the organization must be independent of the utilities which own Zimmer and of contractors whose work will be subject to the independent review. Independence has been defined by the Commission as being the ability "...to provide an objective, dispassionate technical judgement, provided solely on the basis of technical merit...." (Page 1 of Response to Questions, attached to Ottinger/Dingell letter.) The Commission further defined the term by stating that the company approved to conduct an independent review must be one "...not previously involved with the activities... that they will now be reviewing...." Id.

The Staff has reviewed the information provided by CG&E and TPT regarding previous work performed by TPT for the three utilities who own Zimmer and the principal contractors for the Zimmer project and the comments offered by members of the public on the question of independence.

GA Technologies Inc. and its predecessor company, General Atomic, report they have not performed any work for CG&E, Columbus & Southern Ohio Electric Company, Dayton Power & Light, Sargent and Lundy, or Kaiser. Revenues of $102,700 were received from General Electric Company in 1981 for fabrication of a demineralizer vessel but it was not for the Zimmer project.

STONE & WEBSTER MICHIGAN, INC.

P.O. BOX 2325, BOSTON, MASSACHUSETTS 02107

April 28, 1983

Mr. James R. Miller
799 Roosevelt Road
Glen Ellyn, IL 60137

THIRD PARTY CONSTRUCTION IMPLEMENTATION OVERVIEW
MIDLAND NUCLEAR COGENERATION PLANT -
CONSUMER POWER COMPANY

Dear Mr. Miller:

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Very truly yours,

P. A. Wild
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D. B. Miller - CPC

APR 29 1983

November 1982

CHAWLA, JATINDER

DESIGNER
ELECTRICAL DIVISION

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BARANOW, STANLEY W

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FIELD QUALITY CONTROL

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Appointments:

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UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION III
799 ROOSEVELT ROAD
GLEN ELLYN, ILLINOIS 60137

MAR 28 1983

Docket No. 50-329
Docket No. 50-330

Consumers Power Company
ATTN: Mr. James W. Cook
Vice President
Midland Project
1945 West Parnall Road
Jackson, MI 49201

Gentlemen:

By letter dated January 10, 1983, Consumers Power Company described its proposed Construction Completion Program (CCP) for the Midland nuclear facility. This submittal was followed by a public meeting in Midland on February 8, 1983 for the NRC to obtain a better understanding of your proposed program and to obtain public input on the CCP. As a result of our review of the CCP to date, we find we need the following additional information.

A. Please provide a more detailed description of the scope of the CCP and how it is going to function. Your discussions should address the following subjects or concerns:

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.

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

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

8304010351

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 PQCI's prior to training being initiated on the PQCI's. 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.

5. As a result of the diesel generator building inspection, hold points were established by the NRC for the purpose of determining that you adequately performed all of the actions to which you have committed before allowing the work to proceed beyond the hold point. In view of the total CCP effort, the NRC does not wish to remain in the approval chain; therefore, you are requested to develop measures that will ensure that key hold points are honored and that critical parameters of your program are in place before proceeding to the next step.

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.

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.

B. Please provide a more detailed description of the third party installation implementation overview mentioned in your January 10, 1983 letter. Your description should address the following subjects or concerns:

1. The installation implementation overview appears to focus solely on future construction and rework. We believe the overview should also encompass all aspects of the CCP, including the reinspection work. Please expand the installation implementation overview to include other aspects of the CCP and provide us with additional details of the overview.

2. Weekly reports, similar to those issued by Stone and Webster to inform the NRC of the results of the soils overview, are needed. Please provide your commitment to have the third party CCP overviewer prepare weekly reports similar to the soils overview weekly reports.

3. The CCP overview should continue until CPCo and the NRC have confidence in the adequacy of the CPCo quality assurance program.

C. Please propose a candidate organization that Consumers Power Company considers acceptable for the installation implementation overview together with your rationale for selecting that organization. The NRC will also need the following:

1. Sworn statements from the candidate corporation and all personnel who will be involved in the third party installation implementation overview, addressing the independence factors described in Chairman Palladino's letter of February 1, 1982 to Congressmen Ottinger and Dingell.

2. The resumes of the key personnel to be involved in the third party overview.

3. A description of the experience of the candidate corporation that qualifies the corporation to perform an independent third party overview.

The NRC will determine the acceptability of the candidate corporation and will notify CPCo. Our present view is that the installation implementation overviewer would not be acceptable to also perform the independent design and construction verification program.

In order to ensure adequate communications between the NRC, CPCo, the independent third party proposed or selected to conduct the independent design/construction verification program, and the public, the protocol in Enclosure 1 should be adhered to. This protocol does not apply to the third party overview of the remedial soils work or the third party overview of the CCP.

Should you have any questions regarding this letter please contact Mr. R. F. Warnick of my staff.

Sincerely,

Original signed by
A. Bert Davis

James G. Keppler
Regional Administrator

Enclosure: As stated

cc w/encl:
DMB/Document Control Desk (RIDS)
Resident Inspector, RIII
The Honorable Charles Bechhoefer, ASLB
The Honorable Jerry Harbour, ASLB
The Honorable Frederick P. Cowan, ASLB
The Honorable Ralph S. Decker, ASLB
William Paton, ELD
Michael Miller
Ronald Callen, Michigan
Public Service Commission
Myron M. Cherry
Barbara Stamiris
Mary Sinclair
Wendell Marshall
Colonel Steve J. Gadler (P.E.)

Discussed with IE & NRR. Most Comments from Stone & Webster included.

RIII	RIII	RIII	RIII	RIII	RIII
Gardner/jp	Shafer	Warnick	Lewis	Davis	Keppler
3/25/83			3/25	3/25	for 3/28

IE/NRR

Docket No. 50-329
Docket No. 50-330

PROTOCOL GOVERNING COMMUNICATIONS BETWEEN CONSUMERS POWER COMPANY AND THE ORGANIZATION CONDUCTING THE INDEPENDENT DESIGN/CONSTRUCTION VERIFICATION PROGRAM

1. Recommendations, findings, evaluations and all exchanges of correspondence, including drafts, between the independent reviewer and CPCo will be submitted to the Regional Administrator at the same time as they are submitted to CPCo. For purposes of this protocol, the independent reviewer includes the independent reviewer and any of its subcontractors and Consumers Power Company (CPCo) means CPCo, Babcock and Wilcox, Bechtel, Management Analysis Corporation, S&W, and all of their subcontractors.

2. The independent reviewer has a clear need for prompt access to whatever information is required to fulfill its role. To this end, the independent reviewer may request documentary material, meet with and interview individuals, conduct telephone conversations, or visit the site to obtain information without prior notification to the NRC. All communications and transmittals of information shall, however, be documented and such documentation shall be maintained in a location accessible for NRC examination.

3. If the independent reviewer wishes to discuss with CPCo substantive matters related to information obtained, to provide an interim report to CPCo, or to discuss its findings or conclusions with CPCo in advance of completing its report, or if CPCo desires such communication, such discussions shall be accomplished in meetings open to public observation. In this regard, CPCo shall provide a minimum of five days advance notice to the Regional Administrator of any such meeting. The Regional Administrator shall make reasonable efforts to notify representatives of interested members of the public of the meeting, but the inability of any person to attend shall not be cause of delay or postponement of the meeting. Transcripts or written minutes of all such meetings should be prepared by the organization requesting the meeting and provided to the NRC in a timely manner. Any portion of such meetings which deals with proprietary information may be closed to the public.

4. All meetings between the Staff and CPCo and/or the independent reviewer will be open to public observation, except where the Staff determines that it is appropriate to conduct a meeting(s) in private with CPCo and/or the independent reviewer.

5. All documents submitted to, or transmitted by, the NRC subject to this Protocol, unless exempt from mandatory public disclosure, will be placed in the NRC Public Document Rooms in Midland, Michigan and Washington, D. C., and will be available there for public examination and copying.

Lewis

UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION III
799 ROOSEVELT ROAD
GLEN ELLYN, ILLINOIS 60137

APR 15 1983

Docket No. 50-358

Cincinnati Gas and Electric
Company
ATTN: W. H. Dickhoner, President
139 East 4th Street
Cincinnati, OH 45201

Gentlemen:

By letter dated March 7, 1983, you proposed that Torrey Pines Technology (TPT) be retained as the independent organization to conduct the review of CG&E's management of the Zimmer project required by Section IV.B(1)(a) of the Commission's November 12, 1982 Order. Supplemental information in support of this request was provided by TPT letters to you dated March 18, 22, and April 5, 1983, and to J. A. Vennemann dated April 5, 1983.

We find the proposal to use TPT for this assignment to be acceptable and to be consistent with the independence and competence criteria outlined in the Commission's letter of February 1, 1982 to Congressmen Ottinger and Dingell. However, TPT's review should not start until NRC approves the scope and certain details of the management review. In order for us to complete our review as expeditiously as possible, we wish to meet with TPT to be briefed in detail on TPT's plans for the management review. This meeting will be held in Cincinnati and be open to public observation. We will be available to meet with TPT on April 22 or 25, 1983.

8304190073

APR 15 1983

Cincinnati Gas and Electric
Company

Enclosure 1 provides our evaluation of your proposal to use Torrey Pines Technology to conduct the review of the management of the Zimmer project.

Sincerely,

/s/ James G Keppler

James G. Keppler
Regional Administrator

Enclosure: As stated

cc w/encl:
Mr. Earl A. Borgman, Senior
Vice President
J. R. Schott, Plant
Superintendent
J. D. Flynn, Manager
Licensing Environmental
Affairs Department
DMB/Document Control Desk (RIDS)
Resident Inspector, RIII
Harold W. Kohn, Power
Siting Commission
Citizens Against a Radioactive
Environment
Helen W. Evans, State of Ohio
Robert M. Quillin, Ohio
Department of Health
Thomas Applegate
Thomas Devine, Associate
Director, Institute for
Policy Studies
Dave Martin, Office of
Attorney General
Mark Wetterhahn, Esq.
Jerome A. Vennemann, Esq.
Gretchen Hummel, Ohio
Consumers' Counsel
James R. Williams, State
Liaison Officer, Ohio
Disaster Services Agency

RIII	RIII	RIII	RIII	IE	NRR	ELD
RFW	LHZ					
Warnick/jp	Lewis	Davis	Keppler	Sniezek	Youngblood	Lieberman
04/15/83	4/15/83	4/15/83	4/15/83	by RFW	by RFW	by RFW

Enclosure 1

Staff Evaluation of Cincinnati Gas & Electric Co.
Proposal to Use Torrey Pines Technology to Conduct
the Review of the Management of the Zimmer Project
in Accordance with Section IV.B(1)(a) of the
Commission's November 12, 1982 Order

Purpose and Background

The purpose of this document is to provide an evaluation of the Cincinnati Gas and Electric Company's (CG&E) March 7, 1983 response to Section IV.B(1)(a) of the Commission's November 12, 1982 Order to Show Cause and Order Immediately Suspending Construction (CLI-82-33). The Order requires CG&E to take the following steps:

1. Obtain an independent review of its management of the Zimmer project, including its quality assurance and quality verification programs, to determine measures needed to ensure that construction of the facility can be completed in conformance with the Commission's regulations and the construction permit. (Section IV.B(1)(a)).

2. Based upon the independent review, make recommendations to the Administrator of NRC Region III concerning the management of the project. (Section IV.B(1)(b)).

3. Submit to the Regional Administrator an updated comprehensive plan to verify the quality of construction of the facility. (Section IV.B(2)(a)).

4. Submit to the Regional Administrator a comprehensive plan, based on the results of the verification program, for the continuation of construction. (Section IV.B(2)(b)).

This evaluation relates only to the approval of CG&E's proposal for an outside organization to conduct the independent management review under Section IV.B.(1)(a). That provision makes the selection of the independent management review subject to the approval of the Regional Administrator. CG&E initially requested approval of the Bechtel Power Corporation to conduct reviews under both Sections IV.B.(1) and IV.B.(2) of the Order and stated its intention to use Bechtel as a joint project manager for completion of construction. However, in view of the Commission's February 18, 1983 decision that Bechtel should not perform the roles of both independent management reviewer and joint project manager, CG&E has proposed that Torrey Pines Technology (TPT) be responsible for the independent management review.

CG&E's Proposed Independent Reviewer

CG&E has proposed that TPT, a subsidiary of GA Technologies, Inc. (GA), perform an independent management review of the Zimmer project in accordance with Section IV.B(1)(a) of the Commission's November 12, 1982 Order. The NRC Staff has considered CG&E's submittal of March 7, 1983, TPT's and CG&E's responses to Region III questions, written public comments, and the clarification of submitted comments and additional comments received at a public

meeting held in Cincinnati on March 28, 1983. In considering CG&E's proposal, the Staff has used as guidance the letter of February 1, 1982 from Chairman Palladino to Congressmen Ottinger and Dingell, which sets forth the "competence" and "independence" standards that have been applied by the Commission in determining the acceptability of proposed third-party reviewers.

TPT's Competence

The Staff has considered the qualifications of both the TPT/GA organization and the individuals proposed as team members to conduct the independent review of CG&E's management of the Zimmer project. Input to the Staff's review included the information supplied in CG&E's submittal, the responses to the Staff's inquiries and the Staff's existing knowledge of TPT's performance at other nuclear power plants, and information from members of the public as to TPT's competence.

The Staff has reviewed TPT's and GA's experience in assessing the management of nuclear construction projects, particularly its performance in independent reviews of design, construction, and quality assurance undertaken for utilities as input to the NRC's operating license reviews (Palo Verde, Waterford and San Onofre)[1]. TPT's reviews have entailed evaluation of the management performance of the utilities involved. The staff has evaluated these reviews, and found them to be competent and thorough.

The Staff has also reviewed the qualifications of the key persons proposed for the project, as set forth in the March 7, 1983 submittal, and has concluded that the team has significant stated experience in QA/QC matters, nuclear plant construction, and management systems. These are the skills which we find necessary to carry out the independent management review required under Section IV.B(1)(a) of the Order. Through reference checks and/or discussions with NRC Staff members familiar with the key personnel, we have verified their experience and competence in these areas.

Based upon its review, the Staff concludes that the TPT organization and the individual review team members are competent to conduct the independent management review, and meet the technical competence standards set forth in the Ottinger/Dingell letter.

TPT Independence

The Staff believes that for an organization to be acceptable to conduct this verification program the organization must be independent of the utilities which own Zimmer and of contractors whose work will be subject to the independent review. Independence has been defined by the Commission as being the ability "...to provide an objective, dispassionate technical judgement, provided solely on the basis of technical merit...." (Page 1 of Response to

[1] It should be noted that TPT conducted an independent review of the Shoreham project for Long Island Lighting Company. Since this effort was not conducted under the NRC staff's auspices, it was not reviewed by the NRC; therefore, it was not considered in this evaluation.

Questions, attached to Ottinger/Dingell letter.) The Commission further defined the term by stating that the company approved to conduct an independent review must be one "...not previously involved with the activities... that they will now be reviewing...." Id.

The Staff has reviewed the information provided by CG&E and TPT regarding previous work performed by TPT for the three utilities who own Zimmer and the principal contractors for the Zimmer project and the comments offered by members of the public on the question of independence.

GA Technologies Inc. and its predecessor company, General Atomic, report they have not performed any work for CG&E, Columbus & Southern Ohio Electric Company, Dayton Power & Light, Sargent and Lundy, or Kaiser. Revenues of $102,700 were received from General Electric Company in 1981 for fabrication of a demineralizer vessel but it was not for the Zimmer project.

GA has not identified any contacts with any companies relating to the Zimmer project over the life of the Zimmer project other than the general marketing contacts to present their engineering service capabilities. A general presentation on radiation monitoring systems was made to Sargent and Lundy in the 1977 timeframe. However, this was not specific to Zimmer, and it did not result in a request for bid on the Zimmer project.

All TPT/GA professional personnel assigned to work on the Zimmer management review will provide the NRC with sworn statements regarding their independence. TPT has stated that none of the staff expected to be assigned to the Zimmer management review has any prior work experience with CG&E or on Zimmer.

Information provided by TPT to the Staff demonstrates that recent contracts with Bechtel account for less than 3% of total GA revenue. Based on this information, the Staff has no basis to believe that TPT is not sufficiently independent of Bechtel. In addition, TPT/GA has stated that key personnel who will be involved in the CG&E management review have not worked under a contract with Bechtel. Individuals will provide sworn statements to this effect.

The Staff concludes that TPT and the key personnel who have been identified for the conduct of the review meet the standards of independence outlined in the Ottinger/Dingell letter.

TPT's Review Program

TPT's proposed detailed outline and scope for its management review of Zimmer will need to be submitted to CG&E and the Staff, and approved by the NRC, prior to the initiation of the review at Zimmer. The Staff plans to hold a meeting with TPT specifically to obtain additional information from TPT regarding their proposed program. This meeting will be open for public observation.

Summary and Conclusion

Based on our review of the documentation submitted by CG&E and TPT, followup checks, and consideration of oral and written comments of members of the public, we conclude that TPT meets the independence and competence criteria for third party reviewers.

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 an 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.

Janice M. Bates
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 1 Day of April 1983

Suzanne M. Battikha
Notary Public

My Commission Expires My Commission expires May 3, 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 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 Jr

Sworn and Subscribed Before Me This 7th Day of April 1983

Susanne 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. 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	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 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, 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 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

Susanne M. Battaglia
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 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

Suzanne 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 #463[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] 1984

Rick Scallow

B3-4220700-LP240J

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 Lanoue
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	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 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. 01IV4601469, 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
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 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. Boone
Notary Public

JACQUELINE A. [illegible]
NOTARY PUBLIC, State of New York
No. 01[illegible]4601469, 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

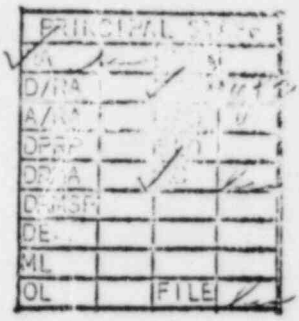
Sworn and Subscribed Before Me This ___ Day of April 1983

Alma R. Willits
Notary Public

ALMA R. WILLITS, Notary Public
Northampton Twp., Bucks Co.
My Commission Expires March 14, 1985

My Commission Expires _____

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

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

8305240223

MAY 20 1983

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

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 [illegible] County
No. 4638996
My Commission Expires MARCH 30, 1985

J. M. Miller

STONE & WEBSTER MICHIGAN, INC.

P.O. BOX 2325, BOSTON, MASSACHUSETTS 02107

PRINCIPAL STAFF			
EA			
D/RA	✓		
A/RA			
DFRP			
DRMA	✓		
DRSP			
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

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Mr. Baranow is replacing Mr. W. MacKay and Mr. Chawla is replacing Mr. J. Hannwacker.

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Very truly yours,

P. A. Wild
Vice President

Enclosures

MAY 20 1983

Figure 3-1

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April 1, 1983

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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
Commission Expires March 30, 1985

My Commission Expires _____

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
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	50-330 OL

AFFIDAVIT OF S.W. BARANOW

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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 [illegible] New York
Qualified [illegible] 4618996
My Commission Expires March 30, 1985

My Commission Expires MARCH 30, 1985

Lewis

UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION III
799 ROOSEVELT ROAD
GLEN ELLYN, ILLINOIS 60137

APR 15 1983

Docket No. 50-358

Cincinnati Gas and Electric
Company
ATTN: W. H. Dickhoner, President
139 East 4th Street
Cincinnati, OH 45201

Gentlemen:

By letter dated March 7, 1983, you proposed that Torrey Pines Technology (TPT) be retained as the independent organization to conduct the review of CG&E's management of the Zimmer project required by Section IV.B(1)(a) of the Commission's November 12, 1982 Order. Supplemental information in support of this request was provided by TPT letters to you dated March 18, 22, and April 5, 1983, and to J. A. Vennemann dated April 5, 1983.

We find the proposal to use TPT for this assignment to be acceptable and to be consistent with the independence and competence criteria outlined in the Commission's letter of February 1, 1982 to Congressmen Ottinger and Dingell. However, TPT's review should not start until NRC approves the scope and certain details of the management review. In order for us to complete our review as expeditiously as possible, we wish to meet with TPT to be briefed in detail on TPT's plans for the management review. This meeting will be held in Cincinnati and be open to public observation. We will be available to meet with TPT on April 22 or 25, 1983.

8304190023

APR 15 1983

Cincinnati Gas and Electric
Company

Enclosure 1 provides our evaluation of your proposal to use Torrey Pines Technology to conduct the review of the management of the Zimmer project.

Sincerely,

James G. Keppler

James G. Keppler
Regional Administrator

Enclosure: As stated

cc w/encl:
Mr. Earl A. Borgmann, Senior
Vice President
J. R. Schott, Plant
Superintendent
J. D. Flynn, Manager
Licensing Environmental
Affairs Department
DMB/Document Control Desk (RIDS)
Resident Inspector, RIII
Harold W. Kohn, Power
Siting Commission
Citizens Against a Radioactive
Environment
Helen W. Evans, State of Ohio
Robert M. Quillin, Ohio
Department of Health
Thomas Applegate
Thomas Devine, Associate
Director, Institute for
Policy Studies
Dave Martin, Office of
Attorney General
Mark Wetterhahn, Esq.
Jerome A. Vennemann, Esq.
Gretchen Hummel, Ohio
Consumers' Counsel
James R. Williams, State
Liaison Officer, Ohio
Disaster Services Agency

RIII	RIII	RIII	RIII	IE	NRR	ELD
RFW	LHZ					
Warnick/jp	Lewis	Davis	Keppler	Sniezek	Youngblood	Lieberman
04/15/83	4/15/83	4/13/83	4/15/83	by RFW	by RFW	by RFW

October 13, 1982

SECY-82-414

POLICY ISSUE
(Notation Vote)

FOR: The Commissioners

FROM: William J. Dircks, Executive Director for Operations

SUBJECT: DIABLO CANYON DESIGN VERIFICATION PROGRAM - PHASE II RECOMMENDATIONS

PURPOSE: In accordance with the Commission's request (COMJA-82-6) of July 27, 1982, this paper provides the staff recommendations regarding Phase II of the Diablo Canyon Independent Design Verification Program (IDVP) and its relationship to the ongoing Phase I program.

BACKGROUND: By memorandum dated September 24, 1982, we provided you with a Status Report of ongoing activities associated with the verification of the seismic design of Diablo Canyon Unit 1. The memorandum noted that findings from Phase I of the IDVP and other recent developments may influence the staff's conclusions with regard to the Phase II Program Plan which was submitted to the NRC for approval on June 18, 1982. We have continued to pursue those matters and have developed our recommendations with regard to the Program Plan. The staff findings and recommendations are discussed below.

DISCUSSION: We have summarized in Figure 1 the elements of the Order and letter of November 19, 1981. The original requirements needed to support a fuel-load/low-power (FL/LP) decision have become known as Phase I whereas items originally requiring completion before a decision regarding power levels greater than 5% were defined as Phase II. It is important to note that although they were defined as such at the time, both the Phase I Order and the Phase II letter acknowledged that an expansion of either or both efforts may be necessary. In this context, the staff examined the overall findings to date and a number of recent developments to determine if any modifications to the originally defined scope of Phase I and Phase II need be made.

Contact:
D. Eisenhut, NRR/DL
X27672

8211090214

Overall Findings to Date

As of September 24, 1982, the IDVP had identified 199 technical concerns requiring resolution. A number of these have subsequently been resolved and 13 have been classified as "A/B" errors. These are errors in which design criteria or operating limits of safety-related equipment could have been exceeded and physical modifications, changes in operating procedures, more realistic calculations, or retesting are required to bring the plant into conformance with the original design. These technical concerns can be summarized as follows:

Fully resolved:	147		
Errors:		3	(3 A/B errors)
No design criteria or operating limits exceeded:		144	
Review continuing:	52		
by PG&E:		28	(9 A/B errors)
by IDVP:		24	(1 A/B errors)
Total	199		(13 A/B errors)

Furthermore, PG&E has identified 33 concerns within their Internal Technical Program (ITP). Six have been resolved and 27 concerns have been classified as A/B errors. These errors are not directly additive because there exists some overlap between the IDVP and ITP errors.

As of September 15, 1982, PG&E had completed 344 modifications as follows:

Modifications

Pipe supports	257
Other supports	43
Annulus structure	38
Other	6
Total	344

It should be noted that not all A/B errors will necessiate modifications and that a single error may result in a number of modifications. In addition some of these modifications, made to date, were a result of the errors from either, or both, the IDVP and ITP and some were modifications undertaken by PG&E even though they believe the error could have been shown acceptable by detailed calculations.

c. The results from an independent analysis performed by the staff's contractor, Brookhaven National Laboratory, raised a number of seismic concerns regarding PG&E original seismic analysis of the containment annulus structure. BNL developed a three dimensional vertical model and identified concerns regarding the distributed masses, modeling of joints, as-built dimension variations, spectra-smoothing techniques, modeling of piping bends and calculated piping support forces used in PG&E's original analysis. These concerns were forwarded to TES for consideration of their generic implications by the IDVP. PG&E has indicated that a majority of these concerns had been separately identified by the IDVP and/or PG&E. The staff will audit the IDVP resolution of these concerns. Enclosure 2 provides additional discussion.

d. Region V inspection of the ongoing activities identified a number of open inspection issues. These issues include verification that the seismic analysis model adequately characterizes the seismic responses of the Auxiliary Building, Intake Structure and various equipment and components. Some of these issues had been previously identified by the IDVP. These issues are being closed out by both Region V and NRR personnel via their consideration in the in the ITP and IDVP. A summary of these issues is provided in Enclosure 3.

e. The original Phase I IDVP proposed, and the NRC accepted, to include a reevaluation of the Hosgri analyses only. The remaining seismic analyses will be examined by the IDVP in the Phase II program. The staff discussion of this action is provided in Enclosure 4.

2. IDVP Phase II Results:

a. Preliminary results from the R. F. Reedy Phase II QA audit indicated that there exist deficiencies in the QA controls of the PG&E design program and of certain of their contractors.

b. The results from the PG&E initiated QA audits of their in-house design activities and their safety-related service contractors are summarized in Enclosure 5. The PG&E findings are consistent with the preliminary results from the R. F. Reedy Phase II QA audit (discussed in a. above). Region V attended the R. F. Reedy, Inc. audit exit meeting and subsequently audited the PG&E self-review. A memorandum discussing

f. The decision by PG&E to undertake a walkdown of as-built safety-related structures, systems, and components to increase confidence that as-built conditions are identified and evaluated.

g. The PG&E proposal for staged licensing is discussed in Enclosure 9. This proposal is to complete, prior to fuel loading, the review, analysis, and modifications for those systems required for fuel load. The remainder of the systems will be examined subsequently. The staff has reviewed the PG&E proposal and concurs in their identification of systems with some additions to the "supportive" list of equipment.

4. IDVP/ITP Interface:

The IDVP has presented plans to include the results of the expanded PG&E activities as inputs to the IDVP program. This proposal is included in the Figure 2 flow chart.

Proposed Phase II Program

With regard to the contractors for Phase II of the IDVP, PG&E has proposed to retain Teledyne Engineering Services (TES) as the IDVP program manager. The principal subcontractors to TES are Robert L. Cloud Associates (RLCA), R. F. Reedy, Inc. (RFR), and Stone & Webster Engineering Company (SWEC). The staff has examined the financial independence of the Phase II contractors from both PG&E and Bechtel in addition to the independence of individual employees assigned to the IDVP. The criteria used by the staff in its evaluation are the same as those used in the Phase I evaluation. The staff also has reviewed the technical qualifications of the IDVP contractors. Enclosure 10 summarizes the staff review and our findings, determining that the contractors are technically qualified and are independent.

The adequacy of the Phase II Program Plan was reviewed by the staff against the requirements of our November 19, 1981 letter. Enclosure 11 describes the proposed program and presents the staff findings on that program.

CONCLUSIONS: Based on our review of the proposed Diablo Canyon Phase II IDVP, the status and results of other ongoing activities, as discussed above, and consideration of comments of the intervening parties to this proceeding, we have reached the following conclusions:

RECOMMENDATIONS: That the Commission:

1. Approve the Phase II Program Plan and contractors as modified by the staff conclusions in Enclosure 11.

2. Approve the redirection of the Phase I/Phase II division to require that the Phase II review/evaluation efforts be sufficiently completed, as identified in Figure 3, prior to a fuel-load/low-power decision.

William J. Dircks
Executive Director for Operations

Enclosures:
As stated

Commissioners' comments should be provided directly to the Office of the Secretary by c.o.b. Thursday, October 28, 1982.

Commission Staff Office comments, if any, should be submitted to the Commissioners NLT Thursday, October 21, 1982, with an information copy to the Office of the Secretary. If the paper is of such a nature that it requires additional time for analytical review and comment, the Commissioners and the Secretariat should be apprised of when comments may be expected.

This paper is tentatively scheduled for consideration at an Open Meeting during the Week of October 18, 1982. Please refer to the appropriate Weekly Commission Schedule, when published, for a specific date and time.

DISTRIBUTION:
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REGIONAL OFFICES
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ACRS
ASLBP
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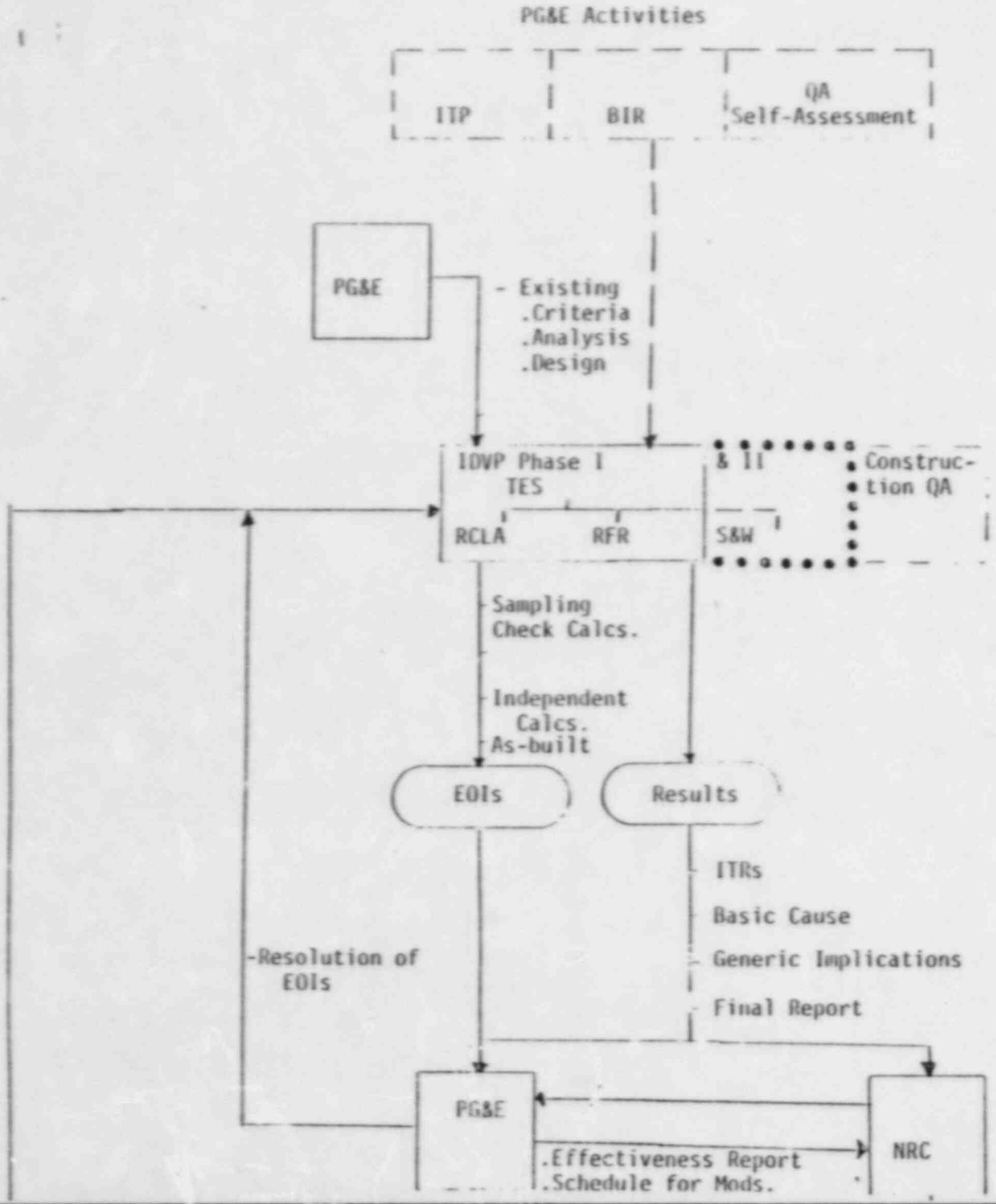
SECY

Figure 2: IDVP/PG&E Activities



PHASE I (in solid lines)

1. IDVP of all SSR prior to 6/78

   a. Basic Cause Report
   b. PG&E Concl. re: Effectiveness
   c. Schedule for Mods.

PHASE II (in "dotted" lines)

1. IDVP for NSSR prior to 6/78
2. IDVP for PG&E internal QA
3. IDVP for all SR post 1/78

For each of 2, 3, 4

   a. Basic Cause Report
   b. Effectiveness Decision
   c. Schedule for Mods.

Other additional activities undertaken or proposed by PG&E. (dashed lines)

List of Enclosures

1. Staff Evaluation of Interim Technical Reports
2. BNL Independent Analysis
3. Diablo Canyon IDVP Open Inspection Issues
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ENCLOSURE 10

STAFF EVALUATION OF PHASE II CONTRACTORS

Technical Qualifications of Contractors

The principal subcontractors to Teledyne Engineering Services (TES) for the Phase II program are Robert L. Cloud Associates (RLCA), R. F. Reedy, Inc. (RFR), and Stone & Webster Engineering Company (SWEC).

Phase II seismic structural and mechanical review is designated largely for RLCA. This is the same role that they played in Phase I, and the staff sees no reason to question the continued participation of RLCA in this capacity. The quality assurance aspects are assigned to RFR. Since the same assignment was given to RFR during Phase I, the staff also sees no reason to change their continued participation in Phase II. In summary, the technical qualifications of RLCA and RFR were well established prior to Phase I and have been amply verified by their activities to date.

The SWEC scope includes the selection of representative samples of safety-related system designs and analysis performed by Pacific Gas and Electric Company (PG&E) and service contractors, the development of the design chain for the sample activities, a review of the selected sample systems, and performance of representative calculations for the purpose of design process verification. The verification program includes review of the safety-related system design requirements, including the electrical and control design requirements, equipment environmental qualification, and design analyses.

The staff has reviewed numerous facilities designed by SWEC and audited their design process both at the quality assurance and technical levels. SWEC had full responsibility for the concept, design, and installation of systems similar to those available for sampling at Diablo Canyon. Based on this experience, the staff concluded that SWEC is fully qualified to perform the functions assigned in the Phase II Independent Design Verification Program (IDVP) for Diablo Canyon.

In addition Teledyne has identified (Semi-Monthly Report, dated August 27, 1982) the following consultants that will provide assistance to the IDVP in specialized areas:

Hansen, Holley and Biggs (civil/structural)
General Dynamics (radiation)
Alexander Tusko Inc. (electric power)
Foster Miller Associates (instrumentation and control)
J. W. Wheaton (electric power team leader)
Abendruh Inc. (soils).

Independence of Contractors

During Phase I, the staff concluded that TES, RLCA, SWEC and RFR were independent from PG&E. Mr. Howard Friend, the Diablo Canyon Project Manager has informed the NRC staff that all of Bechtel's stock is held by the Bechtel family or officers

of the company and is not available to these or other subcontractors. In addition, he does not believe that Bechtel does any business with any of the subcontractors listed above with the exception of TES. He estimates that Bechtel's business accounts for about 2% of TES's annual revenues.

The staff has requested written verification from both TES and Bechtel regarding any business dealings between PG&E and Bechtel and the Phase II subcontractors. Based on the above, however, it appears that no financial conflicts of interest exist among the IDVP subcontractors, PG&E and Bechtel.

Verification of Independence for Technical Reviewers

TES has developed during Phase I of the IDVP a procedure to assure the financial and professional independence of individuals assigned to the IDVP. The staff reviewed the procedure and approved it by letter dated September 8, 1982. The procedure applies to TES and subcontractor employees and includes a confidential conflict of interest statement.

Region V has initiated a program to routinely verify the independence of IDVP technical reviewers. The purpose of this program is to assure that the individuals performing the IDVP will provide an objective, dispassionate technical judgment, based solely on technical merit. The following factors were considered in evaluating the question of independence:

(1) Whether the individuals involved had been previously hired by PG&E or BPC to do similar design work.

(2) Whether any individual involved had been previously employed by PG&E or BPC (and the nature of the employment).

(3) Whether the individual owns or controls significant amounts of PG&E or BPC stock.

(4) Whether members of the present household of individuals involved are employed by PG&E or BPC.

(5) Whether any relatives are employed by PG&E or BPC in a managment capacity.

The organizations involved in the IDVP (TES, SWEC, RLCA, RFR) developed "conflict of interest statements" for their applicable employees to sign. The statements were used to screen the proposed participants for any potential or apparent conflicts of interest with respect to the IDVP. Originally, the conflict of interest statements referred only to PG&E; however, BPC has recently been added to the statement. In addition to signing the original statements, the participants will be required to sign the revised statements reflecting the current Bechtel involvement in Diablo Canyon.

To verify that the individual participants meet the established independence criteria, the staff has reviewed conflict of interest statements, reviewed resumes, and confidentially interviewed participants. The following is a summary of that effort:

(1) Conflict of Interest Statement--The Region V staff reviewed conflict of interest statements of all of the key TES participants (44 statements). These 44 statements included statements of six individuals employed by consultants to TES. The organizations that these individuals represent are J. W. Wheaton Tecnlology; Hasen, Holley, Biggs, Inc.; Alexander Kusko, Inc.; and Foster-Miller Associates. The conflict of interest statements signed by these individuals indicated that none of the individuals have any significant past or present involvement with PG&E or Diablo Canyon. The conflict of interest statements did not include BPC. Recently, Bechtel has been added to the statements. The revised statements will be signed by the individuals involved.

Region V has completed independence reviews of R. F. Reedy Inc. and R. L. Cloud Associates. The reviews has established that two senior managers from R. F. Reedy Inc., were previously employed by Bechtel Power Company. During the Teledyne/PG&E/NRC meeting of October 7, 1982, it was determined that Teledyne intends to have R. F. Reedy, Inc., examine the PG&E/Bechtel design quality assurance applied to the corrective action program. Region V has identified to senior PG&E management the possible "conflict of interests" in this matter. PG&E management has stated that they will take appropriate action to assure that there will be no "apparent" conflict of interests in the quality review of corrective actions.

In addition to the conflict of interest statements of the TES individuals, the staff has reviewed the conflict of interest statements of the SWEC participants in the IDVP. Sixty-six conflict of interest statements were reviewed and included all of the SWEC participants with the exception of two individuals whose statements were not available at the time of the review. The conflict of interest statements signed by these individuals indicated that none of the individuals have any significant past or present involvement with PG&E or Diablo Canyon. Similiar to the TES conflict of interest statements, the SWEC statements did not include Bechtel; the statements will be revised to include Bechtel and will be re-signed by the SWEC participants.

(2) Resumes--The professional resumes of key TES and SWEC participants have been reviewed by the staff to give additional information regarding the question of independence. This effort included 34 resumes of TES personnel (including consultants) and 36 resumes of SWEC personnel. The resumes indicated no employment history with either PG&E or Bechtel.

In addition, the resumes were used to evaluate the professional experience and competence of the participants. The staff concluded that the TES and SWEC individuals involved in the IDVP are competent and experienced in the matters under review.

(3) Confidential Interviews--To further evaluate the question of independence, the staff selected key participants in the IDVP and conducted condfidential interviews with them. This effort included interviews with thirteen TES personnel, nine SWEC personnel, and approximately 50% of the RLCA participants from their West Coast office. In addition to the question of independence, the line of questioning by the staff included the possiblity of pressure being applied to suppress findings. Based on these interviews, the staff concluded that there is no conflict of interest between the participants in the IDVP and PG&E and Bechtel, and the participants feel no pressure to suppress possible findings.

Interviews with TES West Coast employees, RFR employees, and RLCA East Coast employees are currently in progress

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

April 1, 1983

Prepared by

STONE & WEBSTER

STONE & WEBSTER MICHIGAN, INC.

P.O. BOX 2325, BOSTON, MASSACHUSETTS 02107

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

April 1, 1983

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 materials 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 license 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 notification 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 (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

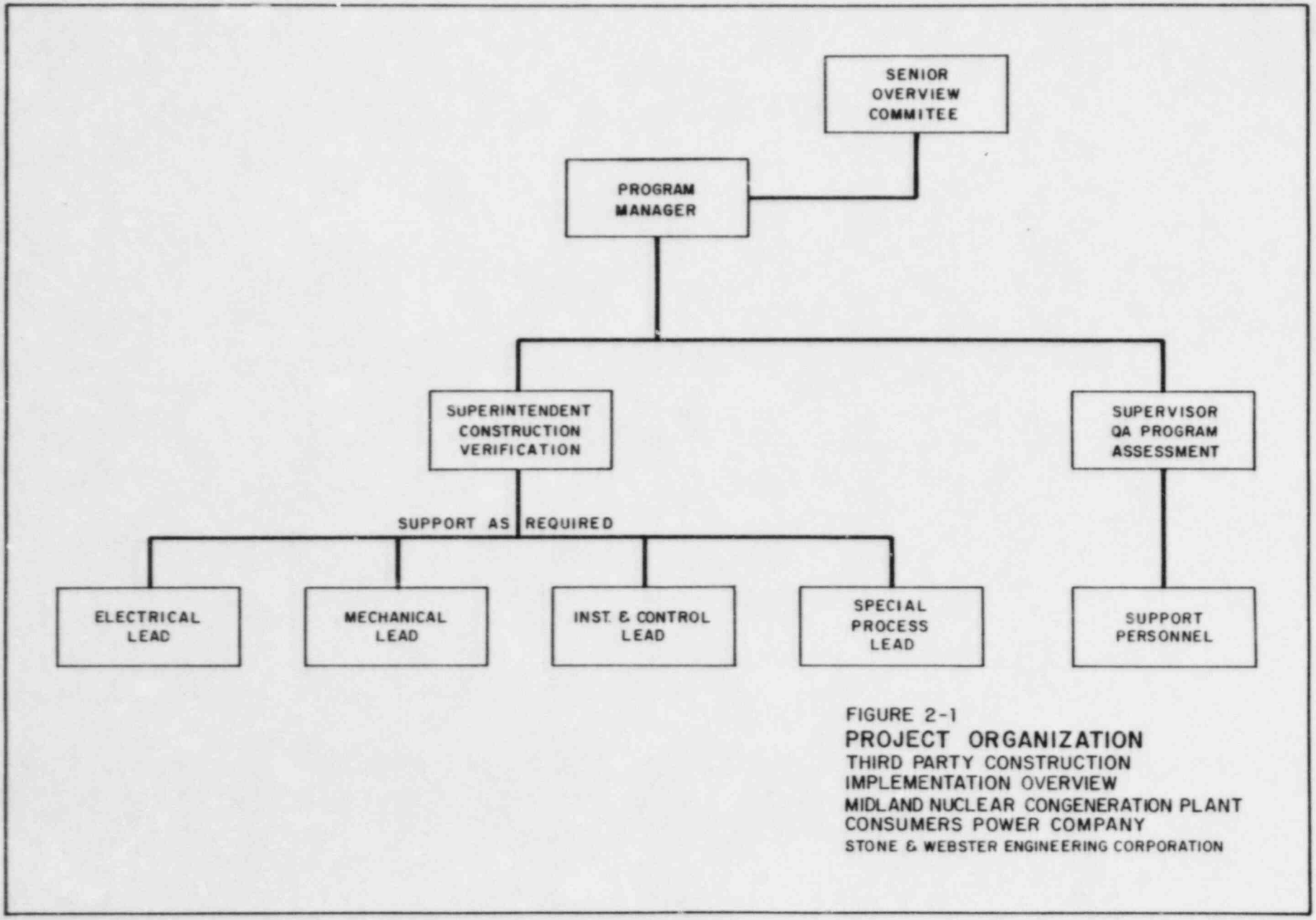

FIGURE 2-1
PROJECT ORGANIZATION
THIRD PARTY CONSTRUCTION
IMPLEMENTATION OVERVIEW
MIDLAND NUCLEAR CONGENERATION PLANT
CONSUMERS POWER COMPANY
STONE & WEBSTER ENGINEERING CORPORATION

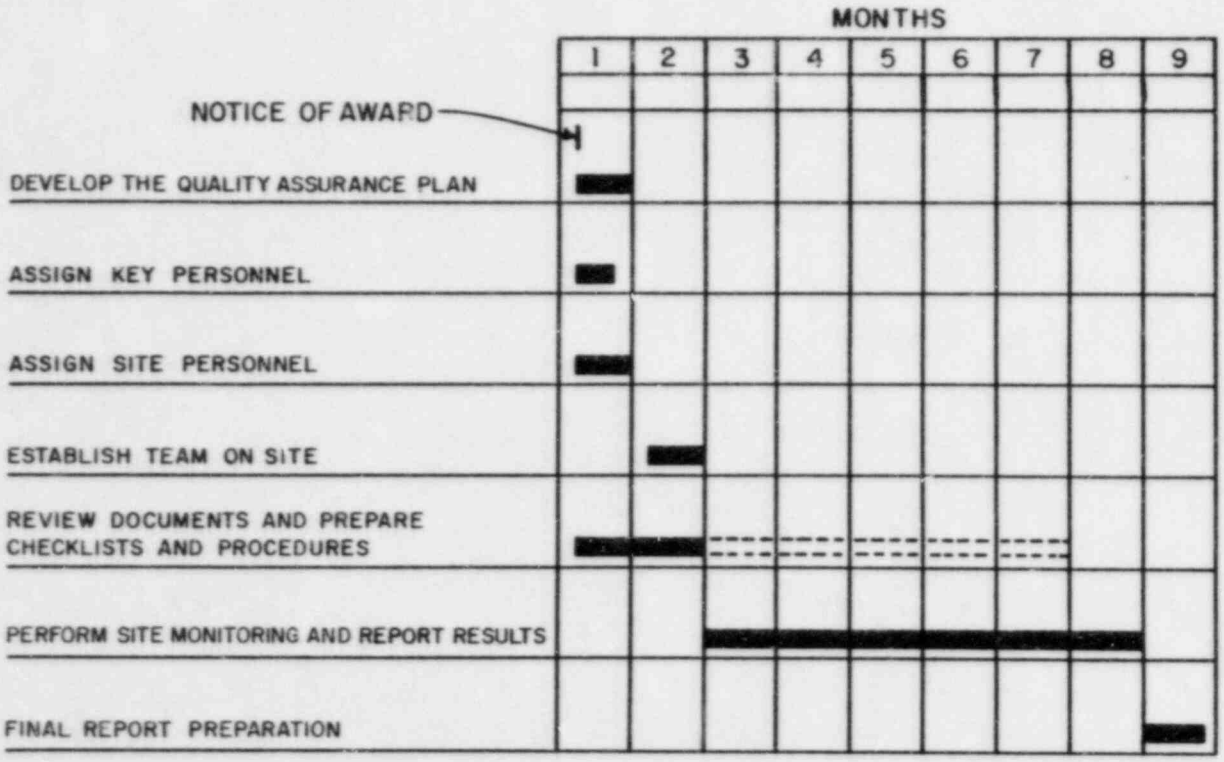

FIGURE 2-2
PROJECT SCHEDULE
THIRD PARTY CONSTRUCTION
IMPLEMENTATION OVERVIEW
MIDLAND NUCLEAR COGENERATION PLANT
CONSUMERS POWER COMPANY
STONE & WEBSTER ENGINEERING CORPORATION

Resumes are attached for the following personnel:

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

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 Cperations 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

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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

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stock, bonds or other securities issued on behalf of the Consumers Power Company; and

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Dated 3-28-83

Signature Richard S. Scallan

Richard S. Scallan
Print Name

FIGURE 3-1

STATMENT REGARDING POTENTIAL OR APPARENT CONFLICTS OF INTEREST

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stock, bonds or other securities issued on behalf of the Consumers Power Company; and

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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 3/25/93

Signature /s/ [illegible]

WILLIAM MACKAY
Print Name

FIGURE 3-1

STATMENT REGARDING POTENTIAL OR APPARENT CONFLICTS OF INTEREST

To: Stone & Webster Engineering Corporation

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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

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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.

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Dated 3-24-83

Signature W D. Miller

W. D. MILLER
Print Name

FIGURE 3-1

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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 G M 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

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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 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

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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

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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

Resumes are attached for the following personnel:

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

NORMAN B. CLEVELAND SENIOR OVERVIEW COMMITTEE

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. (Cont)

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

(510) 735-4469

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

Leslie Good
(212) 298-6757

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 [illegible] 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 carbide insert tooling for utilization throughout the plant. Responsible for all new tooling, fixturing, troubleshooting, quotations, and purchasing.

U. S. NUCLEAR REGULATORY COMMISSION
REGION III

SUBJECT: STONE AND WEBSTER ENGINEERING CORP. THIRD PARTY ASSESSMENT REPORT FILE (UNDERPINNING)

DATE: REPORT NO. 82 [illegible]

CONTENTS MUST NOT BE REMOVED

RETURN TO: [illegible]

PRINCIPAL STAFF

RA	✓	DRPP	
		DE	
		DRMSP	
		DRMA	
		SCS	✓
		ML	
ENF		File	

STONE & WEBSTER MICHIGAN, INC.

P.O. BOX 2325, BOSTON, MASSACHUSETTS 02107

United States Nuclear Regulatory Commission
Midland Site Resident Office
Route 7,
Midland, Michigan 48640

February 28, 1984

J.O. No. 14358
Ref. MPF 75

Attention: Mr. Cook

DOCKET NO. 50-339/330
MIDLAND PLANT UNITS 1 & 2
INDEPENDENT ASSESSMENT OF UNDERPINNING
REPORT NO. 75

A copy of the Independent Assessment of Underpinning Weekly Report No. 75 for the period of February 19, 1984 through February 25, 1984 is enclosed with this letter. Included as attachments are the minutes of the daily meetings held during the week between members of the Assessment Team and Site Engineering, Construction, and Quality Assurance personnel.

If you have any questions with respect to this report please contact me at (617) 589-2067.

A. Stanley Lucks
Project Manager

Enclosures
ASL/pd

MAR 9 1984

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J. O. No. 14358
Midland Plant
Units 1 & 2
Independent Assessment of Underpinning

Weekly Report No. 75

February 19, 1984 through February 25, 1984

Personnel on Site

Stone & Webster Michigan, Inc.

P. Majeski	2/19 - 2/21
D. Benvie	2/20 - 2/23
R. Lykens	2/19 - 2/21
J. Springer	2/22 - 2/25
W. Kilker	2/21 - 2/25
D. Zito	2/22 - 2/25
L. Rouen	2/21 - 2/25

Parsons Brinckerhoff

J. Oliveira	2/19 - 2/21
B. Metros	2/22 - 2/25

Meetings Attended

Date	Represented	Purpose
2/21 - 2/24	Stone & Webster Bechtel Consumers Power Parsons	Daily Assessment Team Meeting
2/23	Bechtel Moretrench Groundwater Tech. Mergentime Parsons	CT 1/12 Dewatering Discussion
2/22	Bechtel Consumers Power Stone & Webster	Engineering-Construction Coordination Meeting
2/24	Consumers Power Bechtel Stone & Webster	Project Soils Meeting

Underpinning and Remedial Soils - Construction

Ko-4 Drift: Installation of the third drift set is underway. Excavation is in full-face concrete.

Pier W 13: Excavation of the pier is complete. The lower level struts were installed. Minor water seepage continued from near the top of the excavation and was removed by sump pumping.

Pier W 16: The initial drift set at the heading to the drift was completed. The raker installation is underway. Minor water seepage entering the excavation was removed by sump pumping.

CT 1: The excavation and lagging was completed to El. 584. Perched groundwater seepage entered the excavation requiring grouting, well points and sump pumping for control.

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Midland Plant
Units 1 & 2
Independent Assessment of Underpinning

Pier Kc-9: Excavation of the pier shaft was completed and the bottom mudmat placed.

Pier E 13: The excavation was completed to El. 570 and the lower level struts installed.

E 16 Drift: The drift is complete. Installation of the final drift set is in progress.

CT 12: The excavation and lagging are complete to El. 583. Perched groundwater entering the excavation required control measures similar to those employed at the pier CT 1 excavation.

Well BB 2: The Contractor converted a piezometer to an ejector well and began pumping in order to remove perched water in the granular fill under the Control Tower.

SWPS: Excavation to the first level wale continued. Installation of the soldier pile wale seats is in progress.

Assessment Team Observation - Construction

The Contractor completed the chemical grouting of the soil to El. 583 around the perimeter of piers CT 1/12. The flow of water was substantially reduced and the soils stabilized as a result of the grouting. Nevertheless, wellpoints and sump pumping were installed to remove the remaining seepage . Also, a piezometer located in the Control Tower area midway between piers CT 1 and CT 12 was converted to a pumping well. As of 2/25/84 the water seepage was sufficiently controlled in both excavations to allow excavating to proceed. Plans are being discussed to install horizontal drains out of the UATs into the granular fill beneath the Control Tower. Once installed and operating, these drains should serve to reduce the perched groundwater level in the fill to an even greater extent. In the Assessment Team's opinion, the Contractor has taken prudent measures and proceeded cautiously in the advancement of these excavations. Stability of the surrounding soils continues to be the primary consideration.

The Assessment Team observed the advancement of the excavations for piers Kc-9 and E/W 13 and the drift to pier E 16. The requirements of the procedure and good underpinning practice were met. The backpacking of the lagging with soil or grout was accomplished in a timely and thorough manner and adequate measures were taken to control any groundwater seepage and to provide soil support in any potentially unstable areas.

Assessment Team Observations QA/QC

The Assessment Team conducted a review of the Resident Engineering Document Control Stations. Deficiencies noted during the review included improper posting of attachments to the design drawings and specifications, missing attachments to the design drawings and specifications, and lack of identification on a drawing that an attachment exists. As a result of these observations NIR No. 22 was issued. Presently, the distribution and posting of controlled documents is performed in accordance with the Contractor's Engineering Department procedures. The Assessment Team is aware that methods to improve the distribution and posting of the Resident Engineers controlled documents are being evaluated. In any case, an increased effort is needed on the part of Resident Engineering to maintain their controlled documents in conformance with applicable procedures.

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Units 1 & 2
Independent Assessment of Underpinning

The Assessment Team performed an overview of the classroom training and performance demonstrations for MPQAD QC inspectors. The classroom training sessions observed were on the installation of jackstands and plates, the erection and repair of structural steel, and concrete removal. The training in the installation-type classes concentrated on the technical terminology and PQCI attributes while the concrete removal training focused on the procedural requirements and compliance. In the Assessment Team's opinion, the content of the training sessions was well tailored to the type of construction activity to be inspected. The emphasis on technical content in steel fabrication/erection and welding suits the nature of these activities while in concrete removal the training appropriately concentrated on procedural requirements and compliance with permit limitations.

QA inspector performance demonstrations, conducted by QA Engineers, were observed by the Assessment Team. The procedures tested were on miscellaneous steel fabrication and non-ASME in-process welding inspections. The candidates were required to perform various physical tasks , such as measurements and visual inspections. Also, the examiners asked the candidates to explain the PQCI procedural requirements. The Assessment Team believes the demonstrations adequately tested the candidates' knowledge of the particular activity.

The Assessment Team verified the training of a sampling of 60 craft (i.e. manual) personnel employed by the Auxiliary Building and SWPS Subcontractors. The review revealed the craft personnel in the various work areas had received the required QA Indoctrination training. In addition, the craft foremen had been trained to MPQP 1-2 and to the technical procedures for the work being supervised at the time. These activities were excavating and soil support, grouting, expansion anchor installations, and welding.

Work Activity Packages

The following Work Activity Package overviews are in the open response stage or have been completed during the past week.

WAP No.	Title	Status
58	Bracket & Struts at E/W-10, Struts at E/W-11, and Mass Excavation of Zones Y/Z-3	Opened 2/14/84 Closed 2/22/84
74	Auxiliary Building Slab Support Brackets at El. 614	2/25/84
75	SWPS Install Phase II A/B Soldier Beams	2/23/84

Nonconformance Identification Reports

The following Nonconformance Reports (NIRs) remain open or have been closed during the past week.

NIR No.	Description	Date (Opened)	(Closed)
20	Concrete Admixture Dispenser Calibration	12/1/83	2/24/84

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Midland Plant
Units 1 & 2
Independent Assessment of Underpinning

NIR No.	Description	Date (Opened)	Date (Closed)
22	Resident Engineering Document Control Stations	2/21/84	

Open Items

Items discussed during meetings are categorized as follows:

OPEN ITEMS - An item for which an action is required. The item will remain open until the required action has been taken. Tracking is required.

CLOSED ITEM - An item, usually brought forward by the Assessment Team that is discussed and adequately responded to. No tracking is required.

INFORMATION ITEM - An item, brought forward to provide general background information regarding work, such as work status or an upcoming design change. No tracking is required.

OPINION ITEM - An opinion or suggestion, given by the Assessment Team expressing an alternate construction or quality assurance technique. The opinion or suggestion is given as a possible alternate that may facilitate an operation.

CLOSES ITEM -XX-XX - This notation identifies an action that closes a previously identified open item. Tracking of the open item stops.

The following is a listing of all Open items from the Daily Meeting Notes with Bechtel , the Weekly Meeting with MPQAD or the text of the Weekly Reports. Carry-over items from past weeks which have been Closed this week are also listed.

Item No.	Description	Closure
58-3	Tubular Steel Lagging	Open
64-7	QAP Review Program	Open
64-10	Trend Analysis	Open
71-4	US Testing Work Instructions	Open
71-9	US Testing QA Manual	Open
71-17	Computerized Civil Drawing Register	Open
71-29	Use of "Retired" FCRs	Open

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Midland Plant
Units 1 & 2
Independent Assessment of Underpinning

Item No.	Description	Closure
72-12	Welding Procedures	Open
74-17	Co-ordination of Concrete Placement Activities	Open
74-21	US Testing Corrective Action	Open
74-25	Expansion Anchors	Open
75-9	RE Document Control	Open
75-24	Assessment Team Sampling Methodology	Open

W E. Kilker
Project Engineer

Project Manager

Notes of Daily Meeting
Independent Assessment of Underpinning
Midland Plant, Units 1 & 2
Consumers Power Company

Held at Midland Site
Midland, Michigan
February 20, 1984

No meeting was held on this date.

Notes of Daily Meetings
Independent Assessment of Underpinning
Midland Plant Units 1 & 2
Consumers Power Company

Held at Midland Site
Midland, Michigan
February 21, 1984

Present For:

Consumers Power	Bechtel	MPQAD	Stone & Webster
G. Murray	J. Fisher	R. Sevo	D. Benvie
R. Wheeler	E. Cvikl	J. McMaster	P. Majeski
	J. Gaydos		R. Lykens
	J. Davies		
	D. Lavelle		Parsons Brinckerhoff
	K. Miller *		
	J. Blanchard *		J. Oliveira
	B. Stanley *		

Part time *

PURPOSE

This meeting is held each day to discuss items regarding the Independent Soils Assessment at the Midland Plant, Units 1 & 2.

DISCUSSION

Status Items

Item 75-1 - Auxiliary Building Underpinning Activities .

Perched groundwater has been encountered during excavation of the shaft for pier CT-12. A dewatering well has been installed in the southwest corner of the pier shaft.

Localized sumping to control groundwater seepage is being performed in conjuntion with excavation of the shaft for pier CT-1.

Installation of reshoring has been completed in preparation for finger drifting to pier Kc-4.

Excavation and installation of lagging to the top of the pier Kc-9 bell is almost complete.

Installation of struts for piers W-13 has begun.

Excavation , installation of lagging and backpacking continues on pier E-13.

Installation of the drift set posts on the southwest face of the access pit for pier W-15 has been completed.

Drifting to pier E-16 continues.

(INFORMATION ITEM)

Item 75-2 - SWPS Dewatering System.

J. Fisher reported that uncoupling of the riser pipe from the head assembly on three of the dewatering wells at the SWPS excavation resulted in minor flooding of the excavation on the east side of the SWPS and depositon of eroded material within the excavation on the north side of the SWPS. Cleanup operations are in progress and are expected to be completed later this week.

Notes of Daily Meeting
Independent Assessment of Underpinning
Midland Plant Units 1 & 2
Consumers Power Company

Held at Midland Site
Midland , Michigan
February 21, 1984

The Contractor is presently assessing causes of the equipment failure and remedial action to prevent future occurrences of this type of equipment failure. (INFORMATION ITEM)

Item 75-3 - Welding Procedures.

J. Fisher stated that the FCR incorporating requirements for performance of welding under conditions of severe external shrinkage restraint into MCP-70.00 has been issued. A review to verify that past welding was not subject to severe external restraint conditions is scheduled for completion tomorrow. (Item 72-12 remains OPEN) (INFORMATION ITEM)

Item 75-4 - Tubular Steel Lagging.

E. Cvikl stated that DCNs designating specific areas at the SWPS requiring filling of internal voids in tubular steel lagging have been issued. (Item 58-3 remains OPEN) (INFORMATION ITEM)

Item 75-5 - Trend Analysis.

J. McMaster stated that two procedures to implement a trend analysis program for tracking NCRs are forcasted for issuance on 4/2/84. (Item 64-10 remains OPEN) (INFORMATION ITEM)

New Items

Item 75-6 - Piezometer BB-2.

J. Fisher reported that due to the presence of perched groundwater at pier CT-12, piezometer BB-2 may be converted to a dewatering well. D. Benvie asked if an evaluation was being made as to the need for additional dewatering wells in the vicinity of the remaining control tower piers. D. Lavelle responded that the need for additional dewatering wells is being evaluated. (CLOSED ITEM)

Item 75-7 - Lessons Learned from Level C Wales.

P. Majeski asked the following:

1. Does FSO intend to apply lessons learned from Level C wales to the Level D wales?
2. When changes and problems are identified in the course of performing a work activity , is there an established forum with engineering to evaluate possible impact to future work activities?

J. Fisher will respond. (OPEN ITEM)

Item 75-8 - Survey Control at Pier E-16.

J. Oliveira asked why survey control previously verified for construction of the pier E16 access pit required reverification prior to initiation of drifting activities to the pier. J. Fisher will respond. (OPEN ITEM)

Notes of Daily Meeting
Independent Assessment of Underpinning
Midland Plant, Units 1 & 2
Consumers Power Company

Held at Midland Site
Midland, Michigan
February 21, 1984

Item 75-9 - Resident Engineering Document Control.

As a result of the Assessment Teams review of the Resident Engineers' document control station, the following information was requested:

1. Is there or will there be an administrative procedure for distributing and posting controlled documents at the Resident Engineers document control station?
2. What procedure is used for monitoring the Resident Engineers controlled documents (i.e. sample size, frequency, etc)?
3. Is there a procedure for distributing and implementing the Resident Engineering Controlled Document Register?
4. The Assessment Team requested a description of the Contractors QA and QC review of the Resident Engineers controlled document station.
5. A copy of Management Corrective Action Request/Report # 73 was requested.
6. The Assessment Team requested relevant correspondence between construction and engineering on construction stop work order related audits.

Engineering will respond. (OPEN ITEM)

Notes of Daily Meetings
Independent Assessment of Underpinning
Midland Plant, Units 1 & 2
Consumers Power Company

Held at Midland Site
Midland, Michigan
February 22, 1984

Present For:

Consumers Power	Bechtel	MPQAD	Stone & Webster
G. Murray	J. Fisher	R. Sevo	D. Zito
J. Schaub	E. Cvikl	J. McMaster	W. Kilker
J. Mooney	J. Gaydos		L. Rouen
R. Wheeler	D. Lavelle		D. Benvie

Parsons Brinckerhoff

B. Metros

PURPOSE

This meeting is held each day to discuss items regarding the Independent Soils Assessment at the Midland Plant, Units 1 & 2.

DISCUSSION

Status Items

Item 75-10 - Auxiliary Building Underpinning Activities.

Excavation of the finger drift to pier Kc-4 has began.

Excavation of the shaft for pier Kc-9 and installation of the ring beam has been completed.

Welding of the struts at el. 574' for pier W-13 against pier W-14 has been completed.

Installation of the raker plates for the W-16 pier is in progress.

Installation of the first drift set to pier E-16 is complete.

(INFORMATION ITEM)

Item 75-11 - QAP Review Program.

J. McMaster reported that the QAP task force subcommittee would meet with the full committee on 2/29/84 to make recommendations in regards to revising procedures and PQCIs. (Item 64-7 remains OPEN) (INFORMATION ITEM)

Item 75-12 - NIR # 20.

J. McMaster stated that a Request For Information (RFI) will be sent to Resident Engineering for clarification of their original response to NIR # 20. (INFORMATION ITEM)

New Items

Item 75-13 - NIR # 22.

It was noted that NIR # 22 was issued on 2/21/84. This NIR details deficiencies with the Resident Engineering Document Control Station found during an Assessment Team review. (INFORMATION ITEM)

Notes of Daily Meetings
Independent Assessment of Underpinning
Midland Plant, Units 1 & 2
Consumers Power Company

Held at Midland Site
Midland, Michigan
February 22, 1984

Item 75-14 - Perched Groundwater Beneath the Control Tower.

J. Fisher reported that as a result of perched groundwater encountered in the piers CT 1/12 excavations, methods to dewater the remainder of the control tower area including additional vertical wells and/or horizontal drains are being evaluated. (INFORMATION ITEM)

Response Items

Item 75-15 - Lessons Learned from Level C Wales.

J. Fisher responded to the Assessment Team's question concerning application of lessons learned from present work activities to future work activities. An Engineering task force group meets weekly to review FCRs/FCNs and DCNs originated during the week. This review categorizes changes made to work activities underway and evaluates impact to similar work being performed in other areas of the underpinning work and on future work activities. Specific examples noted include the application of changes made at the E/W8 grillages to the future construction activity at the E/W2 and 5 grillages. The Assessment Team believes that this weekly engineering review meeting is an appropriate forum to assess the impact of change to present work activities on future and/or similar activities. (CLOSES ITEM 75-7)

Item 75-16 - Survey Control at Piers E-16.

J. Fisher provided a response as to the need for a second verification of survey control at the E-16 pier. Procedure MCP-35.00 requires an independent verification of survey control for both the drop pit and drift of a pier because survey control points for both are not always the same. In the case of Pier E-16, the control points did happen to be the same, but in accordance with procedures MCP-35.00 a second verification was required. (CLOSES ITEM 75-8)

Notes of Daily Meeting
Independent Assessment of Underpinning
Midland Plant, Units 1 & 2
Consumers Power Company

Held at Midland Site
Midland, Michigan
February 23, 1984

Present For:

Consumers Power	Bechtel	MPQAD	Stone & Webster
G. Murray	J. Fisher	J. McMaster	D. Benvie
	E. Cvikl	W. Lydell	W. Kilker
	J. Gaydos		D. Zito
			J. Springer

Parsons Brinckerhoff

B. Metros

PURPOSE

This meetingis held each day to discuss items regarding the Independent Soils Assessment at the Midland Plant, Units 1 & 2.

DISCUSSION

Status Items

Item 75-17 - Auxiliary Building Underpinning Activities.

Installation of a groundwater cutoff grout berm around the shafts for piers CT-1/12 at the el. 583' concrete mudmat interface is in progress.

Excavation of the bell for pier Kc-9 has begun.

Grouting of the struts at el. 574' for pier W-13 against pier W-12 has been completed.

(INFORMATION ITEM)

Item 75-18 - Dewatering Control Tower Area.

J. Fisher stated that based on a meeting with the dewatering subcontractor, installation of horizontal drains is being evaluated for the east and west UATs in order to drain perched groundwater from beneath the control tower. (INFORMATION ITEM)

Item 75-19 - SWPS Cleanup.

J. Fisher reported that the cleanup operations at the SWPS excavation have been completed and normal underpinning activities have resumed. (INFORMATION ITEM)

Item 75-20 - NIR # 22.

J. McMaster stated that a QAR has been issued by MPQAD as a result of NIR No. 22. (NIR # 22 remains OPEN) (INFORMATION ITEM)

Notes of Daily Meeting
Independent Assessment of Underpinning
Midland Plant, Units 1 & 2
Consumers Power Company

Held at Midland Site
Midland, Michigan
February 23, 1984

New Items

Item 75-21 - Weekly MPQAD Meetings.

W. Kilker stated that the weekly MPQAD meetings will no longer be held. Discussions on items related to MPQAD will take place at the daily meeting with FSO, the Assessment Team, SMO and MPQAD as has been recent practice. (CLOSED ITEM)

Response Items

No response items were addressed.

Notes of Daily Meeting
Independent Assessment of Underpinning
Midland Plant, Units 1 & 2
Consumers Power Company

Held at Midland Site
Midland, Michigan
February 24, 1984

Present For:

Consumers Power	Bechtel	MPQAD	Stone & Webster
G. Murray	J. Fisher	J. McMaster	W. Kilker
	E. Cvikl		D. Zito
	J. Gaydos		J. Springer
			L. Rouen

Parsons Brinckerhoff

B. Metros

PURPOSE

This meeting is held each day to discuss items regarding the Independent Soils Assessment at the Midland Plant, Units 1 & 2.

DISCUSSION

Status Items

Item 75-22 - Dewatering Control Tower Area.

J. Fisher reported that FSO is taking measures to obtain the permits and materials required to begin the installation of horizontal drains from the UATs and to convert piezometer BB2 into an ejector well. (INFORMATION ITEM)

Item 75-23 - Piers CT 1/12 Excavation .

J. Fisher reported the grout berm around piers CT 1/12 has been completed and the excavation to the mudmat at El. 583 has begun. The inflow of perched groundwater has been substantially reduced. (INFORMATION ITEM)

New Items

Item 75-24 - Assessment Team Review of RE Document Control.

E. Cvikl requested that the Assessment Team provide a brief description of the sample taken in their review of the RE document control station and the attributes considered. The Assessment Team will respond. (OPEN ITEM)

Response Items

Item 75-25 - NIR # 20.

J. Gaydos and J. McMaster stated that the RFI on NIR # 20 has been responded to by FSO/Engineering. J. McMaster provided a copy of the completed RFI and corresponding QAR to the Assessment Team. The Team will evaluate the response. (NIR # 20 Remains OPEN) (INFORMATION ITEM)

Item 75-26 - Resident Engineering Document Control.

E. Cvikl stated that the response to the requests for information outlined in Item 75-9 are in the process of being completed. All responses should be finalized by March 9. (Item 75-9 remains OPEN) (INFORMATION ITEM)

STONE & WEBSTER MICHIGAN, INC.

P.O. BOX 2325, BOSTON, MASSACHUSETTS 02107

United States Nuclear Regulatory Commission
Midland Site Resident Office
Route 7,
Midland, Michigan 48640

February 23, 1984

J.O. No. 14358
Ref. MPF 74

Attention: Mr. Cook

DOCKET NO. 50-339/330
MIDLAND PLANT UNITS 1 & 2
INDEPENDENT ASSESSMENT OF UNDERPINNING
REPORT NO. 74

A copy of the Independent Assessment of Underpinning Weekly Report No. 74 for the period of February 12, 1984 through February 18, 1984 is enclosed with this letter. Included as attachments are the minutes of the daily meetings held during the week between members of the Assessment Team and Site Engineering, Construction, and Quality Assurance personnel.

If you have any qu tions with respect to this report please contact me at (617) 589-2067.

WE Kuller for AS Lucks

A. Stanley Lucks
Project Manager

Enclosures
ASL/pd

FEB 27 1984

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J.O. No. 14358
Midland Plant
Units 1 & 2
Independent Assessment of Underpinning

Weekly Report No. 74

February 12, 1984 through February 18, 1984

Personnel on Site

Stone & Webster Michigan, Inc.

P. Majeski	2/14 - 2/18
D. Benvie	2/13 - 2/18
R. Lykens	2/16 - 2/18
J. Springer	2/12 - 2/14
L. Rouen	2/12 - 2/14
W. Kilker	2/12 - 2/14

Parsons Brinckerhoff, Michigan

J. Oliveira	2/15 - 2/18
B. Metros	2/12 - 2/14

Meetings Attended

Date	Represented	Purpose
2/13 - 2/17	Stone & Webster Bechtel Consumers Power Parsons	Daily Assessment Team Meeting
2/15	Bechtel Spencer & White Prentis	Weekly Schedule Meeting
2/13	Bechtel MPQAD Consumers Power Stone & Webster	Weekly Inter-organizational Meeting
2/17	Consumers Power Bechtel Stone & Webster	Project Soils Meeting

Underpinning and Remedial Soils Activities

Kc-2 to Kc-3 Drift: Concrete placement in the drift invert has been completed.

Kc-3 to Kc-4 Drift: Drifting to Kc-4 is almost complete. Installation of the last drift support set is in progress.

Pier CT-1: Excavation, grouting and placement of lagging in the instrumentation pit of the pier shaft is in progress.

Pier W16: Removal of that portion of the buttress access shaft mudmat within the pier W-16 excavation has been completed. Drilling of expansion anchor holes for the drift post has been completed and installation of drift post has begun.

J.O. No. 14358
Midland Plant
Units 1 & 2
Independent Assessment of Underpinning

Pier W13: Concrete inside pier W13 has been removed to expose the pier W14 embedment.

Pier Kc-9: Excavation of the pier shaft is partially in soil with the remainder of the shaft excavation still in fill concrete.

Pier CT-12: Excavation of the drop pit is complete. Excavation and grouting of the pier shaft is in progress.

Pier E16: Installation of the rakers and plates for drift steel support is complete. Drifting and drift support steel installation is in progress.

Pier E13: Excavation and placement of lagging for the pier shaft is in progress. The pier W14 embedment plates have been exposed inside the pier E13.

Access shafts: Drilling continued for installation of the level C wale supports on the east and west access shafts.

SWPS: Excavation and grouting to the first level of wales continued. Installation of wale seats on the soldier piles is in progress.

Assessment Team Observation - Construction

Pier excavation and drifting operations continued at the Auxiliary Building. Soil conditions observed in piers E/W-13 and Kc-9 were good with only minor groundwater seepage present in all three piers. Localized instability of the granular fill occurred in the vicinity of the pier CT 12 excavation due to groundwater seepage. As a result , the Contractor elected to perform further soil grouting in order to stabilize this soil. Stability of the excavated wall observed subsequent to grouting indicated that the program was effective. The Contractor is continuing to modify the program in accordance with procedures as more difficult ground conditons are encountered.

Lagging placement, backpacking and installation of drift support steel for the Kc-4 drift was observed by the Assessment Team. The installation of support steel was performed in accordance with applicable procedures. Lagging was installed one board at a time and then backpacked prior to installation of the next board. The sand backpacking was tamped firmly and evenly and the lagging placement and backpacking was good resulting in a high quality installation.

After originally being scheduled for placement on 2/10/84, placement of the Kc-2 to Kc-3 drift invert concrete was completed on 2/13/84. The delay resulted from discussions on interpretation of design drawings between FSO and MPQAD. The Assessment Team believes that a more coordinated effort between FSO and MPQAD is needed to ensure that differences in intrepretation of design requirements are resolved in a more timely manner.

The unexplained uncoupling of the riser pipe from the head assembly on three of the dewatering wells located along the east side of the north wall of the SWPS, resulted in erosion of approximately 4 to 6 cubic yards of soil around the wells. The eroded soil was deposited in the excavated area between the soldier pile wall and the SWPS north wall. Additonally the area between the soldier

pile wall and the SWPS east wall was flooded with 1-2 feet of water. Inspection of the soldier pile wall and the SWPS showed that no damage to either had occurred. The Contractor is in the process of investigating the cause of the equipment failure and the need for remedial action.

Assessment Team Observation QA/QC

The Assessment Team has evaluated the performance of the crack monitoring Subcontractor, the Resident Engineering group and MPQAD in response to their upgrading of the crack monitoring activities discussed in the Assessment Team Weekly Report No. 62. The Subcontractor (Wiss,Jenny,Elsner) has modified on-site staffing to provide better coverage for performing activities to the revised procedures. The intent of the procedures is being met.However, minor deficiencies continue to occur in terms of timely submittalal of data, proper completion of the forms and the graphical display of the cracks. These deficiencies have been noted through some 25 NCR's written against these activities over the past several weeks. The Assessment Team believes that the nature of these deficiences is such that the data collected should still be considered valid. However, WJE must strive to improve the accuracy and timing of the data reporting. The Contractor's Resident Engineering group has completed a review of the existing monitoring program and has performed a crack survey throughout the Auxiliary Building. (A similar review and survey are underway in the SWPS.) Modifications to the existing program were made and the results of the survey have been given to the Assessment Team and the NRC. The Contractor's Resident Engineering and QA staff have reviewed the WJE QA manual to determine if revisions are required. The Assessment Team believes the action taken by Engineering have been appropriate and enhance the quality of the activity. The Assessment Team's observations indicate that MPQAD is completing their QC Inspection Reports and QA overview reports in a timely manner. In addition, the Assessment Team feels that the QC surveillance of the WJE activities has been adequate.

The Assessment Team reviewed a sample of 134 QC Inspection Reports (IRs) that had been closed out during the past week. The IRs covered fabrication of the structural and miscellaneous steel, welding of non-ASME items, expansion anchor installation, ground stabilization for the SWPS, and excavation and lagging placement for access pits, pier shafts and pier drifts. The inspection reports reviewed were completed accurately and the qualifications and certifications of the inspectors were found to be acceptable.

Work Activity Packages

The following Work Activy Package overviews are in the open response stage or have been completed during the past week.

WAP No.	Title	Status
58	Bracket & Struts at E/W-10, Struts at E/W-11 and Mass Excavation of Zones Y/Z-3	Opened 2/14/84

J. O. No. 14358
Midland Plant
Units 1 & 2
Independent Assessment of Underpinning

Nonconformance Identification Reports

The following Nonconformance Identification Reports (NIRs) remain open or have been closed during the past week.

NIR No.	Description	Date (Opened)	Date (Closed)
20	Concrete Admixture Dispenser Calibration	12/1/83	

Open Items

Items discussed during meetings are categorized as follows:

OPEN ITEM - An item for which an action is required. The item will remain open until the required action has been taken. Tracking is required.

CLOSED ITEM - An item, usually brought forward by the Assessment Team, that is discussed and adequately responded to. No tracking is required.

INFORMATION ITEM - An item, brought forward to provide general background information regarding work, such as work status or an upcoming design change. No tracking is required.

OPINION ITEM - An opinion or suggestion, given by the Assessment Team expressing an alternate construction or quality assurance technique. The opinion or suggestion is given as a possible alternate that may facilitate an operation.

CLOSES ITEM -XX-XX - This notation identifies an action that closes a previously identified open item. Tracking of the open item stops.

The following is a listing of all Open items from the Daily Meeting Notes with Bechtel the Weekly Reports with MPQAD or the text of Weekly Reports. Carry-over items from past weeks which have been Closed this week are also listed.

Item No.	Description	Closure
57-17	Wall Ties	74-27
58-3	Tubular Steel Lagging	Open
64-7	QAP Review Program	Open
64-10	Trend Analysis	Open
WR 64, Pg. 1	US Testing Corrective Action	74-21
70-2	Review of Crack Mapping Program	74-11
71-4	US Testing Work Instructions	Open

J. O. No. 14358
Midland Plant
Units 1 & 2
Independent Assessment of Underpinning

Item No.	Description	Closure
71-9	US Testing QA Manual	Open
71-17	Computerized Civil Drawing Register	Open
71-29	Use of "Retired" FCRs	Open
72-12	Welding Procedures	Open
72-26	Recertification of Equipment and Tools	74-31
74-17	Co-ordination of Concrete Placement Activities	Open
74-21	US Testing Corrective Action	Open
74-25	Expansion Anchors	Open

W E Kelton
Project Engineer

W E Kelton for H S Peeler
Project Manager

Notes of Daily Meetings
Independent Assessment of Underpinning
Midland Plant, Units 1 & 2
Consumers Power Company

Held at Midland Site
Midland, Michigan
February 13, 1984

Present For:

Consumers Power	Bechtel	MPQAD	Stone & Webster
G. Murray	J. Fisher	R. Sevo	D. Benvie
R. Wheeler	E. Cvikl	J. McMaster	W. Kilker
	J. Caydos		J. Springer
			L. Rouen

Parsons

B. Metros

PURPOSE

This meeting is held each day to discuss items regarding the Independent Soil Assessment at the Midland Plant, Units 1 & 2.

Status Items

Item-74-1 - Auxiliary Building Underpinning Activities.

The access pit to pier E-16 is complete. Drifting to the pier shaft began but is presently on hold while an FCR written against a Hilti embedment that was not installed to its full length is resolved.

Excavation for pier Kc-9 has progressed to el. 586 .

Excavation has progressed to el. 598 for piers CT-1 and CT-12. Lagging in these piers has moved downward approximately 1/2 to 3/4 in. This movement is attributed to rigidity of the grouted soil which prevents friction from developing between the soil and lagging. To alleviate this, 18 in. long spilings have been driven into the soil beneath every fourth lagging.

Excavation of the access pit to pier W-16 is near completion.

Drifting to pier Kc-4 has ceased until an NCR written against double washers installed with the Hilti bolts for one of the drift sets is resolved.

Excavation and lagging installations for piers E/W-13 is in progress.

(INFORMATION ITEM)

Item 74-2 - Welding Procedures.

J. Springer provided a status on the Assessment Team review of the revised welding procedures. The response to the two findings contained in NIR # 21 (i.e. root opening values and welding progression) have been satisfactorily addressed and the Assessment Team closed the NIR on 2/10/84. The procedures were also reviewed with regards to the Assessment Team comments concerning clarification of preheat requirements, stainless steel welding procedures

and reference to Shielded Metal Arc Welding process. The Assessment Team concurs that the applicable procedures with the exception of MCP-70.00 have been adequately revised to address these comments. MCP-70.00 will be revised to address requirements for performance of welding under conditions of severe external shrinkage restraint. Bechtel will verify that past welding was not subject to severe external shrinkage restraint conditions at the time the weld was made. (Item 72-12 remains OPEN) (INFORMATION ITEM)

New Items

Item 74-3 - Pipe Interference with Pier W-6.

J. Springer questioned if the pipe encasement encountered in the Kc-3 to Kc-4 drift will interfere with installation of pier W-6. J. Fisher will respond. (OPEN ITEM)

Item 74-4 - Kc-2 to Kc-3 Drift Invert Concrete.

J. Springer requested that MPQAD provide details on the events which resulted in the delay of the concrete pour for the Kc-2 to Kc-3 drift invert on 2/10/84. J. McMaster will respond . (OPEN ITEM)

Item 74-5 - Revised Crack Mapping Criteria.

J. Springer asked if a schedule has been developed for issuance of revised crack mapping criteria. G. Murray responded that the NRC is still reviewing the revised criteria. Once the review is complete and agreeement is reached between CP Co. and the NRC, the revised criteria will be issued. (CLOSED ITEM)

Item 74-6 - Oil Observed at Jacks.

B. Metros stated that he observed oil around the jacks at piers Kc-2 and Kc-11 and questioned if the jacks were leaking. J. Fisher will respond. (OPEN ITEM)

Item 74-7 - Tension in FIVP Bolts.

L. Rouen asked if there is an ultrasound method for checking tension in the FIVP bolts. R. Wheeler responded that an ultrasound method does exist, but is not being implemented because manual checking of bolt tension has become a time efficient operation. There would be little to be gained by varying the method. (CLOSED ITEM)

Notes of Daily Meeting
Independent Assessment of Underpinning
Midland Plant, Units 1 & 2
Consumers Power Company

Held at Midland Site
Midland, Michigan
February 13, 1984

New Items

Item 74-8 - Discontinued Use of Weldcrete.

W. Kilker asked why the abandoned drill holes were now being wet-cured for a day prior to grouting. J. Gaydos said that the Certificate of Compliance from the Weldcrete manufacturer required resolution. Until this concern is resolved the wet cure of the in-situ concrete will be required. (CLOSED ITEM)

Item 74-9 - QC Inspector Certificaiton.

L. Rouen asked what is the status of a QC inspector whose certification had been recently revoked because of failure to pass an eye exam. J. McMaster replied that a QAR has been opened. A copy of the dispositioned QAR will be given to the Assessment Team. (OPEN ITEM)

Item 74-10 - Proper Identification of Non-Q Purchased Material.

B. Metros questioned the status of an NCR written on the lack of identifying marks on a group of non-Q purchased washers. J. Gaydos replied that the NCR has been dispositoned and the materials properly identified. (CLOSED ITEM)

Response Items

Item 74-11 - Review of Crack Monitoring Reports.

J. Spriggs reported the Assessment Team has reviewed 1) all of the CTL reports on crack evaluations issued since the first of the year, and 2) the Resident Engineering's report on an Engineering Survey of the Auxiliary Building Cracks. The Team has performed an independent evaluation of the alert level cracks noted in the Control Tower slab at el. 685'. The Assessment Team believes the reports and actions taken adequately address the crack monitoring issues raised over the past 3 months. In addition, the Team is aware that CP Co. has supplied responses to the NRC on crack monitoring concerns the NRC stated during a January 4-6 site meeting. (CLOSED ITEM 70-2)

Notes of Daily Meetir
Independent Assessment of Underpinning
Midland Plant Units 1 & 2
Consumers Power Company

Held at Midland Site
Midland, Michigan
February 14, 1984

Present For:

Consumers Power	Bechtel	MPQAD	Stone & Webster
G. Murray	J. Fisher	R. Sevo	D. Benvie
R. Wheeler	E. Cvikl	R. Wheeler	W. Kilker
	J. Gaydos		J. Springer
	P. VanderVeer		L. Rouen
	J. Darby		
			Parsons
			B. Metros

PURPOSE

This meeting is held each day to discuss items regarding the Independent Soils Assessment at the Midland Plant, Units 1 & 2.

DISCUSSION

Status Items

Item 74-12 - Auxiliary Building Underpinning Activities.

The NCR written due to incomplete penetration of Hilti bolts for work on pier E-16 has been dispositioned to "use as is " allowing resumption of drifting operations to the pier. $2\frac{7}{16}$" VS $2\frac{1}{2}$" Other 5 bolts OK

Placement of concrete for the Kc-2 to Kc-3 drift invert has been completed.

Excavation for pier Kc-9 continues through the fill concrete.

Excavation of the access pit to pier W-16 is complete. Drifting to the pier is scheduled to start today.

(INFORMATION ITEM)

Item 74-13 - Discontinued Use of Weldcrete.

P. VanderVeer provided a detailed explanation as to why the use of Weldcrete has been discontinued. An MPQAD audit finding stated that in addition to resolving deficiencies with the certification of compliance, proper documentation has not been provided to ensure that policies governing quality control of standard manufactured (bulk) items such as Weldcrete are met. Until this audit finding has been resolved, the use of Weldcrete has been discontinued. (INFORMATION ITEM)

Item 74-14 - QC Inspector Certification.

J. McMaster provided the Assessment Team with a copy of the QAR opened to address the situation related to the eye exam failure of a QC inspector. The QC inspector has been retested and passed the reexamination. MPQAD will reinspect work completed by the Q.C. inspector subsequent to his last satisfactory eye exam for verification of quality. (Item 74-9 remains OPEN) (INFORMATION ITEM)

Notes of Daily Meeting
Independent Assessment of Underpinning
Midland Plant, Units 1 & 2
Consumers Power Company

Held at Midland Plant
Midland, Michigan
February 14, 1984

New Items

Item 74-15 - NCRs on Crack Monitoring.

J. Springer noted that 15 NCRs have recently been written concerning crack monitoring activities. The nonconforming conditions described in the NCRs are generally procedural in nature. E. Cvikl stated that FSO has met with the crack monitoring subcontractor concerning the recent NCRs. The procedural deficiencies have been attributed to the workload of the crack monitoring subcontractor. Additional crack monitoring teams have been added to decrease the workload. Additionally, the crack monitoring subcontractors QA manual is being revised to address the handling of documents. (CLOSED ITEM)

Response Items

Item 74-16 - Pipe Interference with Pier W-6.

J. Fisher responded to the question raised yesterday about possible interference with the pipe encasement encountered in the Kc-4 drift and pier W-6. Review of the drawings show that the proximity of the pipe encasement has been considered in the design of pier W-6. (CLOSES ITEM 74-3)

Item 74-17 - Kc-2 to Kc-3 Drift Invert Concrete.

The causes for the delay of concrete placement of the Kc-2 to Kc-3 drift invert on 2/10/84 were discussed. A misunderstanding between MPQAD and FSO on requirements for rebar placement resulted in the cancellation of concrete placement at the drift invert. There was general agreement in todays meeting that amore coordinated effort is needed on the part of FSO and MPQAD to prevent the same type of delays from occurring for future concrete placement activities. The Assessment Team will monitor future concrete placement activities to observe the co-ordination process between MPQAD and FSO. (CLOSES ITEM 74-4) (OPEN ITEM)

Item 74-18 - Oil Observed at Jacks.

J. Fisher provided a response in regards to oil observed around the jacks at piers Kc-2 and Kc-11. After the oil was cleaned up, no additional oil was observed around the jacks, indicating that the oil was not associated with leaking of the jacks. (CLOSES ITEM 74-6)

Notes of Daily Meeting
Independent Assessment of Underpinning
Midland Plant, Units 1 & 2
Consumers Power Company

Held at Midland Site
Midland, Michigan
February 15, 1984

Present For:

Consumers Power	Bechtel	MPQAD	Stone & Webster
R. Wheeler	J. Fisher	R. Sevo	D. Benvie
	E. Cvikl	J. McMaster	P. Majeski
	J. Gaydos		
			Parsons
			J. Oliveira

PURPOSE

The purpose of this meeting is to discuss items regarding the Independent Soils Assessment at the Midland Plant, Units 1 & 2.

DISCUSSION

Status Items

Item 74-19 - Auxiliary Building Underpinning Activities.

Probing performed in pier Kc-9 indicates two to three feet of fill concrete remain.

Preparations are being made to install the support strut in pier W13.

(INFORMATION ITEM)

Item 74-20 - Recertification of Equipment and Tools.

J. Fisher advised that a system for tracking renewal of certification for jacks, gages, torque wrenches and other quality related equipment is in effect. Additionally, for items requiring calibration at the Batch Plant, QC maintains a status list at the Batch Plant. In addition to tracking quality related equipment, J. Oliveira asked if their is a tracking system for certification renewal of items such as cranes and any additional equipment used in the underpinning work. (Item 72-26 remains OPEN) (INFORMATION ITEM)

New Items

No new items were discussed.

Response Items

Item 74-21 - US Testing Corrective Actions.

P. Majeski requested that FSO provide the following information with respect to US Testing:

1. Copies of completed revised QCP's which include the Work Instructions.
2. An updated maxtrix of completed cross training of inspectors.
3. An updated list of completed certifications for the Lab chiefs.

With the exception of the above 3 items the Team feels that US Testing has completed the upgrading commitments originally mentioned in Weekly Report 64. (CLOSES WR 64, pg. 1) (OPEN ITEM)

Notes of Daily Meeting
Independent Assessment of Underpinning
Midland Plant, Units 1 & 2
Consumers Power Company

Held at Midland Site
Midland, Michigan
February 16, 1984

Present For:

Consumers Power	Bechtel	MPQAD	Stone & Webster
R. Wheeler	J. Fisher	R. Sevo	D. Benvie
G. Murray	E. Cvikl	J. McMaster	P. Majeski
J. Schaub *	J. Gaydos	M. DeWitt	
J. Mooney *			Parsons
			J. Oliveira

Part time *

PURPOSE

This meeting is held each day to discuss items regarding the Independent Soils Assessment at the Midland Plant, Units 1 & 2.

DISCUSSION

Status Items

Item 74-22 - Auxiliary Building Underpinning Activities.

The embedment plates on pier W-14 have been exposed in pier W-13.

Removal of that portion of the buttress access shaft mudmat within the pier W-16 excavation has been completed.

Installation of the rakers between the drift posts and raker plates in the pier E-16 access pit is complete.

(INFORMATION ITEM)

Item 74-23 - US Testing QA Manual.

J. Gaydos reported that the revised US Testing QA manual is presently being reviewed by project engineering and issuance of the manual is forecasted for 2/29/84. The revised QA manual will contain the new frequency criteria for incorporating change notices into the main body of the manual. In the future the QA manual will be revised to incorporate change notices when the number of change notices exceeds five, but no later than 45 days after issuance of a change notice. (Item 71-9 remains OPEN) (INFORMATION ITEM)

New Items

Item 74-24 - Weekly Report No. 73.

Weekly Report No. 73 was reviewed for open items. It was determined that all open items had been previously identified. (CLOSED ITEM)

Notes of Daily Meet
Independent Assessment of Underpinning
Midland Plant, Units 1 & 2
Consumers Power Company

Held at Midland Site
Midland, Michigan
February 16, 1984

Item 74-25 - Expansion Anchors. on drift sets

J. Oliveira noted that a substantial number of NCRs have been issued due to loosening of the washers on expansion anchors. J. Oliveira asked if alternate construction methods are being evaluated to address the problem associated with the loose washers. E. Cvikl stated that a list has been developed containing possible solutions which range from reducing the torque on the anchorage system to a redesign of the anchorage system. The Assessment Team will track this item for resolution. (OPEN ITEM)

Response Items

Item 74-26 - QC Inspector Certification.

The Assessment Team has reviewed the response to the QAR generated due to the failure of a QC inspector to pass an eye exam. The QC inspector has successfully passed a reexamination and no impact on quality of work performed subsequent to the QC inspector's last satisfactory eye exam was found. The Assessment Team concurs with the QAR response and Item 74-9 is now closed. (CLOSES ITEM 74-9)

Item 74-27 - Wall Ties.

The Assessment Team has reviewed the FCR issued to revise the requirements for use of wall ties. The Assessment Team concurs with the revised requirements specifying the use of wall ties only when LF-grout is used in the pier bell. (CLOSES ITEM 57-17)

Notes of Daily Meeting
Independent Assessment of Underpinning
Midland Plant , Units 1 & 2
Consumers Power Company

Held at Midland Site
Midland, Michigan
February 17, 1984

Present For:

Consumers Power	Bechtel	MPQAD	Stone & Webster
G. Murray	J. Fisher	R. Sevo	D. Benvie
	E. Cvikl	J. McMaster	P. Majeski
	J. Gaydos		
			Parsons
			J. Oliveira

PURPOSE

This meeting is held each day to discuss items regarding the Independent Soils Assessment at the Midland Plant, Units 1 & 2.

DISCUSSION

Status Items

Item 74-28 - Auxiliary Building Underpinning Activities.

Excavation of the pier shaft for pier CT-12 has begun.

The drift excavation to pier Kc-4 is almost complete. Installation of one drift support set remains. (INFORMATION ITEM)

Item 74-29 - Welding Procedures.

J. Fisher stated that issuance of an FCR incorporating a statement into MCP-70.00 addressing requirements for performance of welding under conditions of severe external shrinkage restraint is scheduled for today. Also a review to verify that completed welding was not subject to severe external shrinkage restraint should be completed by 2/22/84. (Item 72-12 remains OPEN) (INFORMATION ITEM)

New Items

Item 74-30 - Overview of Resident Engineering Controlled Documents.

P. Majeski stated that an overview of the Resident Engineers controlled document station has been initiated this morning. (INFORMATION ITEM)

Response Items

Item 74-31 - Recertification of Equipment and Tools.

J. Gaydos responded to the Assessment Team's request for information on certification renewal and maintenance records for cranes and other construction equipment used in the underpinning work. A safety engineer's report and an annual inspection report are issued to track certification renewal and maintenance

of the equipment. The Assessment Team is satisfied that these methods are effective for tracking maintenance and certification of construction equipment used for the underpinning work. (CLOSES ITEM 72-26)

Notes of MPQAD Meeti
Independent Assessment of Underpinning
Midland Plant Units 1 & 2

Held at Midland Site
Midland, Michigan
February 17, 1984

No MPQAD meeting was held this week.

STONE AND WEBSTER ENGINEERING CORPORATION

MIDLAND NONCONFORMANCE IDENTIFICATION REPORT

DATE OF NONCONFORMANCE: February 17 & 18, 1984 NIR Number 22

IDENTIFICATION/LOCATION OF ITEMS: Civil/Soils drawings and Specifications R E Trailers.

DESCRIPTION OF NONCONFORMANCE: The Independent Assessment Team conducted a review of Resident Engineering Civil drawings and specifications at three drawing stick file and specification stations. The criteria for the review was the Design Document Register and the Resident Engineering Drawing and Specification Distribution Schedules.
The following discrepancies were noted:
Drawings
1. Drawing C-2015, Rev. A (RE Vendor & RE Monitoring Stations)
The Design Document Register lists FCR A00492 against the drawing.

Continued on Pg. 2

REMARKS:

INITIATOR: [signature] DATE: 2/21/84 PROJECT MANAGER: [signature] for AS Lucks

CORRECTIVE ACTION BY:
(IDENTIFY ORGANIZATION TAKING CORRECTIVE ACTION)

INITIATOR: PROJECT MANAGER : DATE:

FEB 27 19[illegible]

The FCR was not listed on the drawing nor was the FCR attached to the drawing.

2. Drawing C-2025-12, Rev. 3 (RE Vendor Station)
The Design Document Register lists FCR C-7383 against the drawing. The drawing has FCR C-7389 entered in the outstanding document stamp.

3. Drawing C-2025, Rev. 2 (RE Vendor Station)
The Design Document Register lists DCN's 001, 002 and 003 against this drawing . DCN 003 is not on the drawing and the drawing has a DCN written against drawing C-2026-2 attached to it.

4. Drawing C-2025, Rev. 2 (RE Monitoring Station)
The Design Document Register lists DCN's 001, 002 and 003 against this drawing. The drawing has no DCN's attached and they are not listed on the face of the drawing.

5. Drawing C-2025-5, Rev. 2 (RE Monitoring Station)
The Design Document Register lists DCN's 001 and 002 against this drawing. There is no DCN 001 attached to the drawing nor is the DCN listed on the face of the drawing.

Specifications

1. Specification C-503, Rev. 000 (RE FCR/FCN Station)

This specification is listed on the Resident Engineering Specification Distribution schedule, dated February 15, 1984 and on the Design Document Register, dated February 8, 1984. It is not listed on the Design Document Register, dated February 17, 1984 nor is it present at this station.

2. Specification C-198, Rev. 006 (RE Monitoring Station)

FCR's C-6986 and E-3351 are attached to this specification, however these FCR's are not on the Design Document Register. This discrepancy exists on two controlled copies of the specification at this station.

STONE & WEBSTER MICHIGAN, INC.

P.O. BOX 2325, BOSTON, MASSACHUSETTS 02107

United States Nuclear Regulatory Commission
Midland Site Resident Office
Route 7,
Midland, Michigan 48640

February 15, 1984

J.O. No. 14358
Ref. MPF 73

Attention: Mr. Cook

DOCKET NO. 50-339/330
MIDLAND PLANT UNITS 1 & 2
INDEPENDENT ASSESSMENT OF UNDERPINNING
REPORT NO. 73

A copy of the Independent Assessment of Underpinning Weekly Report No. 73 for the period of February 5, 1984 through February 11, 1984 is enclosed with this letter. Included as attachments are the minutes of the daily meetings held during the week between members of the Assessment Team and Site Engineering, Construction, and Quality Assurance personnel.

If you have any questions with respect to this report please contact me at (617) 589-2067.

BJ Majeski for

A. Stanley Lucks
Project Manager

Enclosures
ASL/pd

8405040284

J. O. No. 14358
Midland Plant
Units 1 & 2
Independent Assessment of Underpinning

Weekly Report No. 73

February 5, 1984 through February 11, 1984

Personnel on Site

Stone & Webster Michigan, Inc.

P.	Majeski	2/5 - 2/9
D.	Benvie	2/6 - 2/10
R.	Lykens	2/5 - 2/9
J.	Springer	2/8 - 2/11
L.	Rouen	2/7 - 2/11
W.	Kilker	2/7 - 2/11
A.	Lucks	2/7 - 2/9
D.	O'Nan	2/8 - 2/9

Parsons Brinckerhoff, Michigan

J.	Oliveira	2/5 - 2/7
B.	Metros	2/7 - 2/11

Meetings Attended

Date	Represented	Purpose
2/6-2/8, 2/10	Stone & Webster Bechtel Consumers Power Parsons	Daily Assessment Team Meeting
2/8	Bechtel Spencer White Prentis	Weekly Schedule Meeting
2/10	Consumers Power Bechtel Stone & Webster	Project Soils Meeting
2/9	NRC Consumers Power Stone & Webster	Monthly Meeting with NRC

Underpinning and Remedial Soils - Construction

Kc-3 to Kc-4 Drift: Drifting has progressed out of the fill concrete and the drift is now completely in soil. Eight of twelve drift support sets have been installed.

Pier CT-1: Excavation of the drop pit is near completion. Excavation and lagging has progressed to el. 590'.

Pier W16: Excavation of the access pit is within 4' of final grade. A 6 in. drain pipe encountered just below the buttress access shaft was removed within the access pit and plugged to prevent inflow of water into the excavation.

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Midland Plant
Units 1 & 2
Independent Assessment of Underpinning

Pier W13: The pier has been excavated to the level of the lower struts and installation of these struts is in progress.

Pier Kc-9: Excavation of the pier has been completed to el. 590'. Removal of fill concrete encountered while excavating the pier is in progress.

Pier CT-12: Excavation of the drop pit is almost complete to el. 590'. Removal of fill concrete encountered on the south side of the excavation is in progress.

Pier E16: The access pit has been completed to final grade. Installation of plates for support of the rakers is in progress.

Pier E13: Excavation of the pier is in progress.

Access Shafts: Drilling continued for installation of the level C wale supports on the east and west access shafts.

SWPS: Excavation and lagging has progressed to the first level of wales along the east side. The west and north sides of the SWPS have been excavated to approximately 3 ft. deep. The final soldier pile for Phase I construction was grouted in place.

Assessment Team Observations - Construction

The construction in the Auxiliary Building included excavation activities in two access pits, two drop pits and three piers. The Subcontractor took adequate measures to control water seepage into the W16 access pit and W13 pier excavations. At the pier CT 1/12 drop pit excavations, the soil stabilization measures previously performed appear to have been quite effective in that the fine sand has, in general, been stable. In the SE corner of the excavation at CT12 there was minor sloughing of material between el. 590 and 593 resulting in a void area of up to 6 inches deep. When the Subcontractor starts backpacking activities, this void area will be filled with soil or grouted.

At the SWPS, excavation methodology, observed by the Assessment Team, conformed with applicable procedures. Over-excavation behind the soldier pile wall was kept to a minimum. The effectiveness of the soil stabilization grouting aided the Contractor in maintining the excavation to the design limits. The excavation lift thicknesses were maintained within specified tolerances. Placement of lagging was performed in accordance with the procedures. Workmanship exhibited by the contractor was of high quality. Drilling of expansion anchor holes for installation of a bearing plate on the SWPS east was observed by the Assessment Team. The bearing plate is part of the soldier pile wall lateral support system and will allow fastening of the first level of struts for transfer of lateral loads from the soldier pile wall to the SWPS wall. Drill permits were in place at the work area. Drilling penetration and hole locations were maintained within the drill permit tolerances. The drill permit procedure is being properly implemented.

J. O. No. 14358
Midland Plant
Units 1 & 2
Independent Assessment of Underpinning

Assessment Team Observations

As part of the Assessment Team's ongoing review of document control as it relates to the underpinning activities, the Contractor's procedures for distribution and posting of documents were reviewed. The first part of the review dealt with the distribution and posting of documents with the FSO organization and between FSO and Central Document Control. A document transmittal/acknowledgement procedure is in effect between FSO and the underpinning subcontractors. A distribution/transmittal log is used for distribution of controlled documents from Central Document Control to FSO. This transmittal log is developed from the main document control register and updated daily. Also, verification of the proper posting of documents at the FSO document control stations is performed by FSO at least once a month using sampling techniques. The second part of the review concerned the distribution and posting of documents between FSO and vendors. Distribution of documents to vendors is controlled through procurement procedures. When a new issue of a document or revision to a document is received by a vendor, the procurement procedures require that a receipt acknowledgement be sent to the Contractor. Proper posting of documents and verification are controlled by the vendors QA program and by other controls established between FSO and the vendors. It is the opinion of the Assessment Team that the Contractor has established appropriate procedures and controls to assure that documents associated with the underpinning work are correctly distributed, transmitted and acknowledged.

The Assessment Team completed a review of the MPQAD-Soils Document Control Station. The purpose of the review was to verify that the drawing revisions released since the lifting of the FCR/FCN related Stop Work Order have been correctly posted. Based on the sample reviewed it is the Team's opinion that the documents are being properly posted.

A review was conducted of QC Inspection Reports that had been closed-out during the previous week. These IRs covered such items as expansion anchor installations, welding, crack monitoring, instrument installations and cable terminations closed-out during the previous week. The review concentrated on the completeness and accuracy of the reports and the qualifications and certifications of the inspectors. All the inspection reports and inspector certifications were found to be acceptable.

The Assessment Team verified that the Contractor's Field Engineers and the Subcontractor's Field Engineers and Superintendents were trained to the site Document Control procedures. These individuals are assigned full-time to the specific work areas and are responsible for assuring the proper construction documents are available and used. In addition, the Team observed that the Quality Awareness session conducted by the Subcontractor for craft personnel was devoted to a discussion of document control and distribution. In the Team's opinion, FSO is adequately implementing project document control procedures and is training the personnel involved in the underpinning work.

J. O. No. 14358
Midland Plant
Units 1 & 2
Independent Assessment of Underpinning

Work Activity Packages

The following Work Activity Package overviews are in the open response stage or have been completed during the past week.

WAP No.	Title	Status
80	Auxiliary/Turbine Building Vertical Movement Monitoring	Closed 2/10/84

Nonconformance Identification Reports

The following Nonconformance Identificatio.i Reports (NIR's) remain open or have been closed during the past week.

NIR No.	Description	Date (Opened)	Date (Closed)
20	Concrete Admixture Dispenser Calibration	12/1/83	
21	Welding Procedures	1/28/84	2/10/84

Open Items

Items discussed during meetings are categorized as follows:

OPEN ITEM - An item for which an action is required. The item will remain open until the required action has been taken. Tracking is required.

CLOSED ITEM - An item, usually brougnt forward by the Assessment Team, that is discussed and adequately responded to. No tracking is required.

INFORMATION ITEM - An item, brought forward to provide general background information regarding work, such as work status or an upcoming design change. No tracking is required.

OPINION ITEM - An opinion or suggestion, given by the Assessment Team expressing an alternate construction or quality assurance technique. The opinion or suggestion is given as a possible alternate that may facilitate an operation.

CLOSES ITEM - XX-XX - This notation identifies an action that closes a previously identified open item. Tracking of the open item stops.

The following is a listing of all Open items from the Daily Meeting Notes with Bechtel, the Weekly Meeting with MPQAD or the text of Weekly Reports. Carry-over items from past weeks which have been Closed this week are also listed.

Item No.	Description	Closure
57-17	Wall Ties	Open

J.O. No. 14358
Midland Plant
Units 1 & 2
Independent Assessment of Underpinning

Item No.	Description	Closure
58-3	Tubular Steel Lagging	Open
64-7	QAP Review Program	Open
64-10	Trend Analysis	Open
WR 64, Pg. 1	US Testing Corrective Action	Open
66-5Q	Request for IR Distribution	73-21
70-2	Review of Crack Mapping Program	Open
70-6	Close Out of Lessons Learned Action Items	73-27
70-21	Document Transmittals	73-11
71-4	US Testing Work Instructions	Open
71-9	US Testing QA Manual	Open
71-17	Computerized Civil Drawing Register	Open
71-29	Use of "Retired" FCRs	Open
72-12	Welding Procedures	Open
72-20	Controlled Document Procedures	73-12
72-26	Recertification of Equipment and Tools	Open

R J Majeski
Project Engineer

R J Majeski for ASLucks
Project Manager

Notes of Daily Meeting
Independent Assessment of Underpinning
Midland Plant, Units 1 & 2
Consumers Power Company

Held at Midland Site
Midland, Michigan
February 6, 1984

Present For:

Consumers Power	Bechtel	MPQAD	Stone & Webster
G. Murray	D. Morris	R. Sevo	D. Benvie
R. Wheeler	J. Fisher		P. Majeski
	E. Cvikl		
	J. Gaydos		Parsons
			J. Oliveira

PURPOSE

This meeting is held each day to discuss items regarding the Independent Soils Assessment at the Midland Plant, Units 1 & 2.

DISCUSSION

Status Items

Item 73-1 - Auxiliary Building Underpinning Activities.

Drifting to Kc-4 has progressed out of the fill concrete and the drift face is now entirely in soil.

Removal of that portion of the buttress access shaft footing required for advancement of the drop pit to Pier E-16 has been completed.

The finger drift to Kc-9 has been completed. Excavation of the pier began during the weekend.

Pier E-9 was rejacked due to settlement in excess of 10 mils within 48 hours.

(INFORMATION ITEM)

Item 73-2 - Computerized Civil Drawing Register.

A review of the computerized civil drawing register by the Assessment Team showed the only drawings listed to date are Bechtel controlled drawings. P. Majeski asked for a clarification as to whether or not other documents including vendor documents and FSK drawings will be listed on the register. J. Fisher stated that the above referenced documents will be incorporated into the register and a schedule will be provided later this week. (Item 71-16 remains OPEN) (INFORMATION ITEM)

Item 73-3 - SWPS Lagging Connector.

E. Cvikl provided a clarification pertaining to welding requirements for fastening of lagging to soldier piles at the SWPS excavation. In addition to welding of every fourth lagging to the soldier pile, welding is also required when the angle between the flange of the soldier pile and the lagging meets certain design criteria. (Reference Item 71-24) (CLOSED ITEM)

Notes of Daily Meeting
Independent Assessment of Underpinning
Midland Plant, Units 1 & 2
Consumers Power Company

Held at Midland Site
Midland, Michigan
February 6, 1984

New Items

Item 73-4 - Weekly Report No. 71.

D. Benvie issued copies of Weekly Report No. 71. No open items were identified for tracking by the Assessment Team. (CLOSED ITEM)

Item 73-5 - Interim Approval of FCR's.

It was noted that interim approval of FCR's has ceased as of 2-4-84. (INFORMATION ITEM)

Response Items

No response items were addressed.

Notes of Daily Meeting
Independent Assessment of Underpinning
Midland Plant,Units 1 & 2
Consumers Power Company

Held at Midland Site
Midland, Michigan
February 7, 1984

Present For:

Consumers Power	Bechtel	MPQAD	Stone & Webster
G. Murray	J. Fisher	R. Sevo	D. Benvie
R. Wheeler	E. Cvikl	J. McMaster	P. Majeski
	J. Gaydos		D. Armstrong
	R. Cleary		
			Parsons
			J. Oliveira

PURPOSE

This meeting is held each day to discuss items regarding the Independent Soils Assessment at the Midland Plant, Units 1 & 2.

DISCUSSION

Status Items

Item 73-6 - Auxiliary Building Underpinning Activities.

J. Gaydos stated that the certification for the concrete batch plant has been received and placement of concrete for the Kc-2 to Kc-3 drift invert is scheduled for later this week. (INFORMATION ITEM)

Item 73-7 - Use of "Retired" FCRs.

J. Fisher reported that establishment of a permanent method for handling and controlling one time deviation FCRs/FCNs is tentatively scheduled for the beginning of April. (Item 71-29 remains OPEN) (INFORMATION ITEM)

Item 73-8 - Computerized Civil Drawing Register.

J. Fisher reported that incorporation of FSK drawings, vendor documents, specifications and other related documents into the computerized civil drawing register is scheduled for mid March 1984. (Item 71-17 remains OPEN) (INFORMATION ITEM)

Item 73-9 - Update on US Testing Corrective Action.

R. Cleary provided a matrix listing current certifications of the US Testing inspectors and the lab chiefs. The list also identifies key test for which the lab chiefs will be certified. Upgrading of a Level II inspector to level III has been completed. (WR 64, Pg. 1 remains OPEN) (INFORMATION ITEM)

Item 73-10 - Crack Mapping Data Sheets.

E. Cvikl provided the Assessment Team with the crack mapping data sheets completed to date for the Auxiliary Building. (Item 70-2 remains OPEN) (INFORMATION ITEM)

Notes of Daily Meeting
Independent Assessment of Underpinning
Midland Plant, Units 1 & 2
Consumers Power Company

Held at Midland Site
Midland, Michigan
February 7, 1984

New Items

No new items were discussed.

Response Items

Item 73-11 - Document Transmittals.

D. Benvie requested that Bechtel discontinue sending copies of Document Transmittals to the Assessment Team. (CLOSES ITEM 70-21)

Item 73-12 - Controlled Document Procedures.

P. Majeski indicated that the Assessment Team has completed its review of the methods used by FSO, Balance of Plant and MPQAD to assure that controlled ~~document Stations~~ receive and post correctly changes to documents . The Assessment Team believes that all stations used for soils work have established sufficient reviews and other safeguards to assure that the construction work is being performed in accordance with current documents. Ongoing changes to the site-wide document control system will be reviewed by the Assessment Team as part of the on-going assessment. Therefore, this item will no longer be tracked. (Closes Item 72-20)

Notes of Daily Meeting
Independent Assessment of Underpinning
Midland Plant, Units 1 & 2
Consumers Power Company

Held at Midland Site
Midland, Michigan
February 8, 1984

Present For:

Consumers Power	Bechtel	MPQAD	Stone & Webster	Parsons
J. Schaub	J. Fisher	R. Sevo	D. Benvie	B. Metros
	E. Cvikl	J. McMaster	P. Majeski	
	J. Gaydos		R. Lykens	
			L. Rouen	
			W. Kilker	
			J. Springer	

PURPOSE

This meeting is held each day to discuss items regarding the Independent Soils Assessment at the Midland Plant , Units 1 & 2.

DISCUSSION

Status Items

Item 73-13 - Auxiliary Building Underpinning Activities.

The drop pit to pier E-16 has been completed and pier excavation began today.

Drilling of vertical rock bolt holes for installation of the transfer frame stabilizer plate at CT-12 has been completed.

Installation of piezometer BB-2 inside the Auxiliary Building has been completed.

(INFORMATION ITEM)

Item 73-14 - Welding Procedures.

J. Fisher reported that the Mergentime and Spencer, White and Prentis welding procedures have been signed off and will be issued by Central Document Control today. (Item 72-12 remains OPEN) (INFORMATION ITEM)

Item 73-15 - Trend Analysis.

R. Sevo reported that two procedures to implement a trend analysis program for tracking NCRs are tentatively scheduled for issuance on 3/1/84. (Item 64-10 remains OPEN) (INFORMATION ITEM)

Item 73-16 - Close Out of Lessons Learned Action Items.

J. Fisher stated that 8 of the 11 action items related to lessons learned from construction activities at the Auxiliary/Building have been closed out. The remaining 3 items to be applied to the SWPS are scheduled for resolution within the next few days. (Item 70-6 remains OPEN) (INFORMATION ITEM)

Notes of Daily Meeting
Independent Assessment of Underpinning
Midland Plant, Units 1 & 2
Consumers Power Company

Held at Midland Site
Midland, Michigan
February 8, 1984

Item 73-17 - Auxiliary Building Crack Survey.

E. Cvikl provided the Assessment Team with a copy of the Auxiliary Building crack survey. The remaining crack mapping data sheets will be available today. (Item 70-2 remains OPEN) (INFORMATION ITEM)

New Items

Item 73-18 - Document Control Training.

W. Kilker asked what training is conducted for manual supervisory personnel on document distribution. J. Gaydos explained that Bechtel and Subcontractor Field Engineers as well as Subcontractor Superintendents are trained to the Document Control procedures. All of these individuals are assigned to the respective work areas on a full-time basis. The Field Engineers are responsible for assuring that the documents used at the respective work areas are correct. To this end, a Work Print list is published daily. A copy of this list is available at the work area. The Quality Awareness sessions conducted by the Subcontractor provides a forum for the dissementation of this information to the craft foremen and craft personnel. Based on this explanation, the Assessment Team believes the training to Document Control procedures being conducted is adequate. (CLOSED ITEM)

Item 73-19 - Plant QAR Concrete Batch.

J. Gaydos reported that MPQAD is in the process of issuing a QAR on the concrete batch plant operation. The QAR addresses Bechtel programmatic committments to approve off-site laboratories and co-ordination of Bechtel and State of Michigan scale calibration frequency requirements. The concrete placement at the pier Kc-2 to Kc-3 drift invert will likely take place on 2/10/84. (INFORMATION ITEM)

Item 73-20 - Void Space Between Lagging.

J. Fisher stated that in order to achieve the required design elevation at the drop pit/pier interface spacing between 8 sets of lagging would be decreased to 1.25 in. from 1.5 in. for construction of piers CT-1 and CT-12. The Assessment Team concurs with this variation of the lagging spacing. (INFORMATION ITEM)

Response Items

Item 73-21 - IR Distribution.

In response to a previous Assessment Team request to be included on the distribution list for closed QC Inspection Reports, L. Rouen stated the Team has been regularly receiving these reports. Item 66-5Q which has been carried as an open item is now closed. (CLOSES ITEM 66-5Q)

Notes of Daily Meeting
Independent Assessment of Underpinning
Midland Plant, Units 1 & 2
Consumers Power Company

Held at Midland Site
Midland, Michigan
February 9, 1984

No meeting was held on this date.

Notes of Daily Meeting
Independent Assessment of Underpinning
Midland Plant, Units 1 & 2
Consumers Power Company

Held at Midland Site
Midland, Michigan
February 10, 1984

Present For:

Consumers Power	Bechtel	MPQAD	Stone & Webster
G. Murray	J. Fisher	R. Sevo	D. Benvie
	E. Cvikl	J. McMaster	W. Kilker
	J. Gaydos		J. Springer
			L. Rouen
			Parsons
			B. Metros

PURPOSE

This meeting is held each day to discuss items regarding the Independent Soils Assessment at the Midland Plant, Units 1 & 2.

DISCUSSION

Status Items

Item 73-22 - Auxiliary Building Underpinning Activities.

Removal of fill concrete encountered during excavation of Pier Kc-9 is in progress.

The approach pit to pier E-16 has been completed. Excavation of the pier began yesterday.

Fill concrete has been encountered while excavating the approach pit for CT-12. Preparations are being made to start removing the fill concrete today.

A 6 in. drain line was encountered while excavating the drop pit to pier W-16.

As of today the differential movement measured at the W8 grillage was 51 mils.

(INFORMATION ITEM)

Item 73-23 - NIR # 20.

J. McMaster reported that the NCR and QAR written as a result of NIR # 20 have been closed and copies of these documents will be transmitted to the Assessment Team today. (INFORMATION ITEM) (NIR# 20 remains OPEN)

Item 73-24 - Welding Procedures.

J. Fisher asked the Assessment Team for a status on the review of the revised Mergentime and Spencer White & Prentis welding procedures. J. Springer stated that the review is in progress. Additionally, J. Springer

Notes of Daily Meeting
Independent Assessment of Underpinning
Midland Plant, Units 1 & 2
Consumers Power Company

Held at Midland Site
Midland, Michigan
February 10, 1984

stated that the Assessment Team is awaiting issuance of a QAR in response to NIR # 21. J. McMaster replied that issuance of the QAR was expected today and a copy of the QAR will be transmitted to the Assessment Team. (Item 72-12 remains OPEN) (CLOSED ITEM)

New Items

Item 73-25 - Weekly Report No. 72.

Weekly report # 72 was reviewed for open items. No open items were identified for tracking by the Assessment Team. The observations on the QAP review program and the status of US Testing are already being carried as Open Items. (CLOSED ITEM)

Item 73-26 - Document Control Training.

W. Kilker stated that the Mergentime Field Engineer conducted a discussion of the site Document Control procedures at the Quality Awareness training sessions held for craft personnel on 2/9/84. A copy of the discussion outline and the attendance sheet was supplied to the Assessment Team. (Refer to Item 73-18) (CLOSED ITEM)

Response Items

Item 73-27 - Lessons Learned Action Items.

J. Fisher reported the 3 remaining open action items from the Auxiliary Building Lessons Learned list have been closed. A summary sheet outline of the actions taken was provided to the Assessment Team. (CLOSES ITEM 70-6)

Notes of MPQAD Meeting
Independent Assessment of Underpinning
Midland Plant Units 1 & 2

Held at Midland Site
Midland, Michigan
February 10, 1984

No MPQAD meeting was held this week.

STONE & WEBSTER MICHIGAN, INC.

P.O. BOX 2325, BOSTON, MASSACHUSETTS 02107

United States Nuclear Regulatory Commission
Midland Site Resident Office
Route 7,
Midland, Michigan

February 9, 1984

J.O. No. 14358
Ref. MPF 72

PRINCIPAL STAFF			
RA	ltr	ERP	
D/RA		DE	
A/RA		CONSP	
RC		DPMA	
PAO		SCS	
SGA		ML	
ENF		File	ltr

KG-13

Attention: Mr. Cook

DOCKET NO. 50-339/330
MIDLAND PLANT UNITS 1 & 2
INDEPENDENT ASSESSMENT OF UNDERPINNING
REPORT NO. 72

A copy of the Independent Assessment of Underpinning Weekly Report No. 72 for the period of January 29, 1984 through February 3,1984 is enclosed with this letter. Included as attachments are the minutes of the daily meetings held during the week between members of the Assessment Team and Site Engineering, Construction, and Quality Assurance personnel.

If you have any questions with respect to this report please contact me at (617) 589-2067.

A Stanley Lucks

A. Stanley Lucks
Project Manager

ASL/pd

FEB 13 1984

~~8405040278~~

J. O. No. 14358
Midland Plant
Units 1 & 2
Independent Assessment of Underpinning

Weekly Report No. 72

January 29, 1984 through February 4, 1984

Personnel on Site

Stone & Webster Michigan, Inc.

P. Majeski	2/1 - 2/4
D. Benvie	1/30 - 2/4
R. Lykens	1/31 - 2/2
J. Springer	1/29 - 1/31
L. Rouen	1/29 - 1/31

Parsons Brinckerhoff, Michigan

J. Oliveira	1/31 - 2/4
B. Metros	1/29 - 1/31
J. Ratner	1/31 - 2/1

Meetings Attended

Date	Represented	Purpose
1/29 - 2/4	Stone & Webster Bechtel Consumers Power Parsons	Daily Assessment Team Meeting
1/30	Bechtel Consumers Power Stone & Webster	Weekly Interorganizational Meeting
2/3	Consumers Power Bechtel Stone & Webster	Project Soils Meeting

Underpinning and Remedial Soils Construction

Kc-2 to Kc-3 Drift: The drift invert has been prepared for placement of a concrete leveling mat.

Kc-3 to Kc-4 Drift: Drifting to pier Kc-4 continued.

Kc-10 to Kc-9 Drift: Reshoring was completed and excavation of the finger drift to Kc-9 has started.

Pier CT-12: Excavation of the drop pit, grouting and installation of lagging has started.

Pier CT-1: Excavation of the drop pit and grouting was started.

Piers E/W - 16: Removal of the buttress access shaft footings in the area of the drop pit began this week.

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Midland Plant
Units 1 & 2
Independent Assessment of Underpinning

Piers E/W-13: Construction of these piers continues.

Level C wales: Drilling continued for installation of wale supports on the east & west sides.

W8 grillage: The W8 grillage was locked off at the end of last week. The differential movement measured at the time of lock off was 69 mils. By the end ofthis week, differential movement has dropped to 48 mils.

SWPS: Grouting along the perimeter of SWPS underpinning excavation on the east side has been completed. Excavation in this area was started on 2/3/84.

Assessment Team Observation - Construction

Excavation, grouting and placement of lagging for the drop pit to piers CT-1 and CT-12 began this week. Placement of grout for soils stabilization was performed in accordance with the procedures. The Assessment Team observed lagging installation and related backpacking operations. Workmanship for performance of the above referenced work and the resulting installation was good.

Drifting to pier Kc-4 continued this week. Use of the Moulten concrete drilling machine for removal of fill concrete in the drift appears to be more efficient as the operators become more familiar with use of the machine. Installation of drift support steel was observed by the Assessment Team. Steel installation was performed in accordance with the applicable procedures and the results are of good quality.

Assessment Team Observations - QA/QC

As part of the Stop Work Order resolution, one time deviation FCRs/FCNs are retired from the documents after a 30 day period. This helps to reduce the number of attachments to the documents. These retired documents are listed on a separate register at Central Document Control. As a result of the 30 day time limit, some FCRs/FCNs on which work had not been completed prior to the Stop Work Order were retired . Upon lifting of the Stop Work Order, Bechtel determined that a procedure was needed to ensure proper implementation of retired attachments. To effect this, an interim method has been implemented for handling and controlling one time deviations. The Assessment Team believes that the use of this interim method is proper during development of the final procedure. The Assessment Team will continue tracking this item until the final procedure has been implemented.

The status of the QAP review program was discussed this week. As a part of the QAP review, a pilot program has been started that will evaluate the effectiveness of the revised PQCI for expansion anchor installation against the current issue. Review of construction procedures and PQCI s for structural steel fabrication is ongoing. In addition, the review program has been expanded to include the welding PQCI and related construction procedures. No schedule has been established for providing recommendations to CP Co as to the feasibility of implementing these three procedures and PQCIs nor have recommendations and guidelines for further reviews been made. A committment was made at the end of September 1983 to make a recommendation regarding implementation of this program for a majority of the PQCIs within a few weeks.

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Midland Plant
Units 1 & 2
Independent Assessment of Underpinning

It is the opinion of the Assessment Team that a more determined effort should be made by all parties involved with the QAP review program in completing the feasibility assessment of revising the PQCIs and related construction procedures.

The Assessment Team was provided with an update on corrective actions and upgrading being undertaken by US Testing. The corrective action required by the MPQAD audit in May 1983 has been completed. US Testing has set a goal of qualifying 90% of US Testing technicians to at least 20 certifications in five months. A list of key tests for which the two laboratory chiefs will be certified is being formulated. The list designating key tests is expected to be issued within a week. Certification of the lab chiefs to at least Level I for these key tests is forecasted for April 1, 1984. Upgrading of a Level II inspector to Level III is presently in progress. Issuance of work instructions prepared under the new format is expected to begin at the end of February and be completed approximately 2 months thereafter. The Assessment Team believes that satisfactory progress is being made in implementing the required upgrading. Efforts to meet the schedule that has been established for certifying inspectors and lab chiefs and issuance of work instructions should be maintained.

Work Activity Packages

No Work Activity Package overviews were opened during the past week.

Nonconformance Identification Reports

The following Nonconformance Identification Reports (NIR's) remain open or have been closed during the past week.

NIR No.	Description	Date (Opened)	Date (Closed)
20	Concrete Admixture Dispenser Calibration	12/1/83	
21	Welding Procedures	1/28/84	

Open Items

Items discussed during meetings are categorized as follows:

OPEN ITEM - An item for which an action is required. The item will remain open until the required action has been taken. Tracking is requried.

CLOSED ITEM - An item, usually brought forward by the Assessment Team, that is discussed and adequately responded to. No tracking is required.

INFORMATION ITEM - An item, brought forward to provide general background information regarding work, such as work status or an upcoming design change. No tracking is required.

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Independent Assessment of Underpinning

OPINION ITEM - An opinion or suggestion, given by the Assessment Team expressing an alternate construction or quality assurance technique. The opinion or suggestion is given as a possible alternate that may facilitate an operation.

CLOSES ITEM -XX-XX - This notation identifies an action that closes a previously identified open item. Tracking of the open item stops.

The following is a listing of all Open items from the Daily Meeting Notes with Bechtel, the Weekly Meeting with MPQAD or the text of Weekly Reports. Carry-over items from past weeks which habe beer Closed this week are also listed.

Item No.	Description	Closure
WR 54,Pg.3	Weld Tech Sheets	72-12
57-17	Wall Ties	Open
58-3	Tubular Steel Lagging	Open
64-7	QAP Review Program	Open
64-10	Trend Analysis	Open
WR 64, Pg. 1	US Testing Corrective Action	Open
66-5Q	Request for IR Distribution	Open
70-2	Review of Crack Mapping Programs	Open
70-6	Close Out of Lessons Learned Action Items	Open
70-21	Document Transmittals	Open
71-4	US Testing Work Instructions	Open
71-8	Distribution and Implementation of Controlled Documents	72-20
71-9	US Testing QA Manual	Open

J.O. No. 14358
Midland Plant
Units 1 & 2
Independent Assessment of Underpinning

Item No.	Description	Closure
71-17	Computerized Civil Drawing Register	Open
71-29	Use of "Retired" FCRs	Open
71-30	Overview of FSO Document Control Station	72-6
72-12	W lding Procedures	Open
72-20	Controlled Document Procedures	Open
72- 26	Recertification of Equipment and Tools	Open

Project Engineer

Project Manager

Notes of Daily Meeting
Independent Assessment of Underpinning
Midland Plant Units 1 & 2
Consumers Power Company

Held at Midland Site
Midland, Michigan
January 30, 1984

Present For:

Consumers Power	Bechtel	MPQAD	Stone & Webster
G. Murray	J. Fisher	J. McMaster	D. Benvie
R. Wheeler	E. Cvikl	R. Sevo	L. Rouen
	J. Gaydos		
	H. Johnson		Parsons
			B. Metros

PURPOSE

This meeting is held each day to discuss items regarding the Independent Soils Assessment at the Midland Plant , Units 1 & 2.

DISCUSSION

Item 72-1 - Auxiliary Building Underpinning Activities.

Reshoring of pier Kc-9 drift is presently being welded into place in preparation for finger drifting to the pier.

Drop pits to piers E/W-16 have been completed to the footings of the buttress access shafts. Removal of footings has begun.

Intermittent activity continues on piers E/W-13 and level C wales.

Excavation of the drop pit is in progress for pier CT-12. Initial grouting has been performed in preparation of lagging placement for the drop pit. An alternate sequence of grouting and excavation will continue during construction of pier CT-12.

Installation of anchor bolts and plates for CT-1 access drift support sets is complete.

(INFORMATION ITEM)

Item 72-2 - Rejacking of Piers.

J. Fisher reported that the W8 grillage was locked off on 1/27/84. Upward differential movement measured at the time of lock off was 69 mils. Upward differential movement measured as of this morning at the W8 grillage has decreased to 51 mils from 69 mils. Pier E11 was rejacked to determine the load on the pier. (INFORMATION ITEM)

Item 72-3 - SWPS-Production Grouting.

J. Fisher reported that production grouting will start for the access shaft at the east end of the SWPS once the work permit has been approved. (INFORMATION ITEM)

Notes of Daily Meeting
Independent Assessment of Underpinning
Midland Plant , Units 1 & 2
Consumers Power Company

Held at Midland Site
Midland , Michigan
January 30, 1984

Item 72-4 - Weld Tech Sheets.

The status of the Assessment Team comments on weld tech sheets was discussed. A meeting is scheduled for later in the day between the Assessment Team and FSO to discuss particular comments in detail. (Item WR 54-pg. 3 remains OPEN) (INFORMATION ITEM)

Item 72-5 - Close out of Lessons Learned Action Items.

J. Fisher reported that resolution of the 11 action items pretaining to lessons learned from construction activities at the Auxiliary Building is on schedule. Bechtel will provide their responses to the Assessment Team in the near future. (Item 70-6 remains OPEN) (INFORMATION ITEM)

New Items

No new items were discussed.

Response Items

Item 72-6 - Overview of FSO Document Control Station.

L. Rouen reported that his overview of the FSO document control station has been completed. The overview verified that documents distributed after lifting of the Stop Work Order have been posted properly at the FSO Document Control Station. (CLOSES ITEM 71-30)

Notes of Daily Meeting
Independent Assessment of Underpinning
Midland Plant Units 1 & 2
Consumers Power Company

Held at Midland Site
Midland, Michigan
January 31, 1984

Present For:

Consumers Power	Bechtel	MPQAD	Stone & Webster
G. Murray	J. Fisher	J. McMaster	D. Benvie
R. Wheeler	E. Cvikl	R. Wheeler	L. Rouen
	J. Gaydos		J. Springer
			Parsons
			B. Metros
			J. Ratner

PURPOSE

This meeting is held each day to discuss items regarding the Independent Soils Assessment at the Midland Plant Units 1 & 2.

DISCUSSION

Status Items

Item 72-7 - Auxiliary Building Underpinning Activities.

Removal of buttress access shaft footings for advancement of drop pits to Piers E/W-16 continues.

The drift invert from Kc-2 to Kc-3 is being prepared for placement of a reinforced concrete mudmat.

Backpacking behind lagging for the access drift to CT-1 is complete.

Pier E-12 was placed on active jacks yesterday.

Upward differential movement measured this morning at the W8 grillage has decreased to 45 mils from 51 mils.

(INFORMATION ITEM)

Item 72-8 - US Testing QA manual.

J. Gaydos reported that the new revision of the US Testing QA manual is presently being reviewed at their headquarters and issuance is scheduled for 2/9/84. (Item 71-9 remains OPEN) (INFORMATION ITEM)

Item 72-9 - SWPS-Production Grouting.

J. Fisher reported that the work permit for soils stabilization at the SWPS has been issued and production grouting began yesterday. (INFORMATION ITEM)

Notes of Daily Meeting
Independent Assessment of Underpinning
Midland Plant, Units 1 & 2
Consumers Power Company

Held at Midland Site
Midland, Michigan
January 31, 1984

Item 72-10 - Tubular Steel Lagging.

E. Cvikl stated that a DCN designating specific areas at the SWPS requiring filling of internal voids in tubular steel lagging will be issued 2/15/84 and a separate DCN for the Auxiliary Building will be issued 2/29/84. (Item 58-3 remains OPEN) (INFORMATION ITEM)

New Items

Item 72-11 - Resolution of NCR's.

J. Ratner expressed concern that two NCR's opened last October and November still remain open. One NCR was written on work at the Level C Wale when drill limits to the drill permit were exceeded and the other was written against clip angles used on the deep seated bench mark. J. Fisher responded that due to the Stop Work Order, resolution of these FCR's had been delayed, but now that the Stop Work Order has been lifted, the Level C wale will be reworked to close out the first NCR and the second NCR will be dispositioned to "use as is." (CLOSED ITEM)

Response Items

Item 72-12 - Weld Tech Sheets.

NIR # 21 was issued yesterday as a result of the Assessment Teams review of the welding procedures. In response to the NIR, Bechtel stated that the welding procedure qualification test records (PQR's) that specified a range of values for root openings will be requalified to a root opening of 0 in. The PQRs which did not specifically identify the vertical weld progress as either up or down will be revised to reflect vertical welding progression as being up. This was the progression used for the original qualification. Additionally, Bechtel noted that the following items will be incorporated into the applicable welding procedures:

1. A note will be added per AWS D1.1-80 section 3.4.7 to clarify preheat requirements for welding.
2. A statement will be added to restrict the use of the stainless steel welding procedure to non structural welds only.
3. Reference to all processes other than Shielded Metal Arc Welding will be deleted in Spencer White & Prentis and Mergentime welding procedures.

Resolution of the above referenced items will be tracked by the Assessment Team. (CLOSES ITEM WR 54, Pg. 3) (OPEN ITEM)

Notes of Daily Meeting
Independent Assessment of Underpinning
Midland Plant, Units 1 & 2
Consumers Power Company

Held at Midland Site
Midland, Michigan
February 1, 1984

Present For:

Consumers Power	Bechtel	MPQAD	Stone & Webster
R. Wheeler	J. Fisher	J. McMaster	D. Benvie
J. Schaub	E. Cvikl		R. Lykens
R. Wieland	J. Gaydos		P. Majeski
J. Mooney	W. Brandes		
			Parsons
			J. Ratner

PURPOSE

This meeting is held each day to discuss items regarding the Independent Soils Assessment at the Midland Plant, Units 1 & 2.

DISCUSSION

Item 72-13 - Auxiliary Building Underpinning Activities.

Finger drifting to pier Kc-9 began yesterday.

The drift invert from Kc-2 to Kc-3 is ready for concrete placement.

Excavation of the drop pit to CT-1 started yesterday.

The upward differential movement measured this morning at the W8 grillage has increased from 45 mils to 48 mils.

(INFORMATION ITEM)

Item 72-14 - SWPS-Production Grouting.

J. Fisher stated that due to the proximity of dewatering wells 507 and 514 to the soil stabilization activities, the areas adjacent to these wells will not be grouted. (INFORMATION ITEM)

Item 72-15 - QAP Review Program.

J. Fisher stated the QAP Task Force committee would hold a meeting today to discuss the status of the PQCI review. (Item 64-7 remains OPEN) (INFORMATION ITEM)

Item 72-16 - Use of Retired FCRs.

J. Fisher reported that an interim method of handling and controlling retired FCRs for use on work that is not yet complete has been implemented. This interim method will remain in effect until the procedure for handling retired FCRs has been revised to establish a satisfactory system for control

and use of retired FCR's. To implement the interim method, documents will be noted with an AR stamp to signify that an "Active Retired" attachment to that document exists. These "Active Retired" attachments will be made available at the applicable soils related document control stations. Once the work described on the retired FCR has been completed, the FCR will be signed and dated, and the AR stamp deleted from the appropriate document. (Item 71-29 remains OPEN) (CLOSED ITEM)

New Items

Item 72-17 - Work on BWST s.

P. Majeski asked what work will take place on the BWST's in the next 6 months. J. Schaub responded that no work was scheduled to be performed on the BWST s in 1984. (INFORMATION ITEM)

Response Items

No response items were addressed.

Notes of Daily Meeting
Independent Assessment of Underpinning
Midland Plant Units 1 & 2
Consumers Power Company

Held at Midland Site
Midland, Michigan
February 2, 1984

Present For:

Consumers Power	Bechtel	MPQAD	Stone & Webster
R. Wheeler	J. Fisher	J. McMaster	D. Benvie
G. Murray	E. Cvikl	R. Sevo	B. Lykens
	J. Gaydos		P. Majeski
	R. Cleary		
	R. Bradford		Parsons
			J. Oliveira

PURPOSE

This meeting is held each day to discuss items regarding the Independent Soils Assessment at the Midland Plant,Units 1 & 2.

DISCUSSION

Status Items

Item 72-18 - Auxiliary Building Underpinning Activities.

Lagging placement in the drop pit for CT-12 has started.

Grouting in the drop pit for CT-1 has began.

Pier E-12 was locked off yesterday.

Upward differential movement measured this morning at the W8 grillage has increased to 53 mils from 48 mils.
(INFORMATION ITEM)

Item 72-19 - Update on US Testing Corrective Action and Upgrading.

R. Cleary gave a status report on corrective actions and upgrading being undertaken by US Testing. Cross training is ongoing with a goal of qualifying 90% of US Testing technicians to at least 20 certifications. US Testing intends to have the two laboratory chiefs certified to at least Level I for key tests. The list of key tests is presently being formulated and should be available within the next few days. The format for preparation of work instructions has been approved. It is expected that issuance of work instructions will begin on 2/24/84 and be completed approximately 2 months thereafter. US Testing expects to have a Level II inspector certified to Level III today. All items from the original MPQAD audit are now closed. A rereview of US Testing by Bechtel is scheduled for April 1984. (WR 64, Pg. 1 remains OPEN) (INFORMATION ITEM)

Item 72-20 - CTL Report Evaluation of El. 685' Slab in the Control Tower.

The Assessment Team received the CTL report on their evaluation of cracking on the el. 685' slab in the Control Tower. (Item 70-2 remains OPEN)
(INFORMATION ITEM)

Notes of Daily Meeting
Independent Assessment of Underpinning
Midland Plant Units 1 & 2
Consumers Power Company

Held at Midland Site
Midland, Michigan
February 2, 1984

New Items

No new items were discussed.

Response Items

Item 72-21- Distribution and Implementation of Controlled Documents.

R. Bradford discussed Bechtel procedures for distribution and implementation of controlled documents. Document control procedures provide for a formal transmittal/acknowledgement process in the distribution of documents between FSO and the subcontractors performing underpinning activities. The FSO document control station is considered part of Central Document Control and therefore no formal document transmittal procedure is required between the two stations. However, a Distribution/Transmittal Log is utilized for transmittal of documents from Central Document Control to FSO. This log is developed from the main document register and constantly updated. A review using sampling techniques will be performed at least once a month by FSO to verify documents are correctly incorporated into the FSO and the subcontractors document control stations. This presentation satisfactorily addresses the questions raised by the Assessment Team concerning distribution and implementation of controlled documents within the FSO. However, the Assessment Team is continuing its review of the transmittal process from Central Document Control. Bechtel responded that their Central Document Control supervisor will meet with the Assessment Team to discuss the document transmittal process. (CLOSES ITEM 71-8) (OPEN ITEM)

Notes of Daily Meeting
Independent Assessment of Underpinning
Midland Plant Units 1 & 2
Consumers Power Company

Held at Midland Site
Midland, Michigan
February 3, 1984

Present For:

Consumers Power	Bechtel	MPQAD	Stone & Webster
G. Murray	J. Fisher	J. McMaster	D. Benvie
	E. Cvikl	R. Sevo	P. Majeski
		M. Butterfield	
			Parsons
			J. Oliveira

PURPOSE

This meeting is held each day to discuss items regarding the Independent Soils Assessment at the Midland Plant, Units 1 & 2.

DISCUSSION

Status Items

Item 72-22 - SWPS - Production Grouting.

J. Fisher reported that grouting on the east side of the SWPS has been completed. Excavation is scheduled to begin today. (INFORMATION ITEM)

Item 72-23 - Welding Procedures.

J. Fisher reported that the next revision to the Mergentime and Spencer White & Prentis welding procedures is scheduled for issue on 2-8-84. (Item 72-12 remains OPEN) (INFORMATION ITEM)

Item 72-24 - QAP Review Program.

M. Butterfield provided an update on the subcommittee review of PQCI's and related construction procedures. Originally, the review encompassed expansion anchor installation and structural steel fabrication procedures & PQCI's. However, the review has now been expanded to include welding. A pilot program for the expansion anchor installation is in progress. The purpose of the pilot program is to evaluate the effectiveness of the new, unissued PQCI versus the current PQCI. Based on the effectiveness of the revised procedures & PQCI's referenced above, recommendations as to the feasibility of revising other procedures & PQCI's will be made to CP Co. (Item 64-7 remains OPEN) (INFORMATION ITEM)

New Items

Item 72-25 - MPQAD Tracking of NIR # 21.

J. McMaster stated that a QAR has been written to initiate action for the close out of NIR # 21. (INFORMATION ITEM)

Notes of Daily Meeting
Independent Assessment of Underpinning
Midland Plant, Units 1 & 2
Consumers Power Company

Held at Midland Site
Midland , Michigan
February 3, 1984

Item 72-26 - Recertification of Equipment and Tools.

J. Oliveira asked J. Fisher if a procedure existed for tracking the need for renewal of recertification of equipment and tools. J. Fisher will respond next week. (OPEN ITEM)

Response Items

No response items were discussed.

Notes of MPQAD Meeting
Independent Assessment of Underpinning
Midland Plant Units 1 & 2
Consumers Power Company

Held at Midland Site
Midland, Michigan
February 3, 1984

No MPQAD meeting was held this week.

STONE & WEBSTER MICHIGAN, INC.

P.O. BOX 2325, BOSTON, MASSACHUSETTS 02107

United States Nuclear Regulatory Commission
Midland Site Resident Office
Route 7,
Midland , Michigan

February 2, 1984

J.O. No. 14358
Ref. MPF 71

Attention: Mr. Cook

DOCKET NO. 50-339/330
MIDLAND PLANT UNITS 1 & 2
INDEPENDENT ASSESSMENT OF UNDERPINNING
REPORT NO. 71

A copy of the Independent Assessment of Underpinning Weekly Report No. 71 for the period of January 22, 1984 through January 28, 1984 is enclosed with this letter. Included as attachments are the minutes of the daily meetings held during the week between members of the Assessment Team and Site Engineering, Construction, and Quality Assurance personnel.

If you have any questions with respect to this report please contact me at (617) 589-2067.

DJ Mazeski for

A. Stanley Lucks
Project Manager

Enclosures
ASL/pd

8403060428

J.O. No. 14358
Midland Plant
Units 1 & 2
Independent Assessment of Underpinning

Weekly Report No. 71

January 22, 1984 through January 28, 1984

Personnel on Site

Stone & Webster Michigan, Inc.

P	Majeski	1/22 - 1/24
D.	Benvie	1/23 - 1/27
R.	Lykens	1/22 - 1/24
J.	Springer	1/25 - 1/28
L.	Rouen	1/25 - 1/28
W.	Kilker	1/25 - 1/27

Parsons Brinckerhoff, Michigan

J.	Oliveira	1/22 - 1/24
V.	Madill	1/25 - 1/27
B.	Metros	1/25 - 1/28

Meetings Attended

Date	Represented	Purpose
1/23 - 1/27	Stone & Webster Bechtel Consumers Power Parsons	Daily Assessment Team Meeting
1/23	Bechtel Consumers Power Stone & Webster	Weekly Interorgan - izational Meeting
1/23	Bechtel Consumers Power Stone & Webster	Engineering-Construction Co-ordination Meeting
1/27	Consumers Power Bechtel Stone & Webster	Project Soils Meeting

Underpinning and Remedial Soils - Construction

Kc-3 to Kc-4 Drift: Drifting to Kc-4 was resumed this week. The Moulten Drilling machine was placed into use to expedite drifting operations.

Kc-10 to Kc-9 Drift: The installation of backpacking and lagging for drift to Kc-9 was completed.

Piers E-13: Grouting of the void area behind the installed pier lagging was completed this week.

J.O. No. 14358
Midland Plant
Units 1 & 2
Independent Assessment of Underpinning

UAT's: Work continued on support sets for the access drifts to piers CT-1 and CT-12.

W8 Grillage: The W8 grillage remained on active jacks all week in order to minimize additional differential movement between the west EPA and the control tower. The differential movement had reached a maximum of 92 mils, but by the end of the week had decreased to 69 mils.

Pier E9: Routine rejacking was performed and the load locked off.

Pier E10: The pier was placed on active jacks to verify the load that it was carrying.

Level C wales: Intermittent activity continued on the Level "C" wale installation.

SWPS: A grout test installation was done as part of a soils stabilization program at the perimeter of the SWPS underpinning excavation . The purpose of the test was to determine the required grout quantities and pressures and the resulting grout penetration.

Assessment Team Observations - Construction

Drifting to pier Kc-4 with the Moulten concrete drilling machine was started this week. The machine made good progress drilling through fill concrete encountered in the drift. However, there appears to be some time loss associated with set up and access to the drilling locations. Modifications to the Moulten machine are being evaluated to alleviate these problems. The Assessment Team believes that the use of the Moulten Drilling machine will expedite drifting through areas where lean mix concrete is encountered and in turn expedite the overall underpinning schedule.

The Assessment Team observed the grout test installation done as part of a soils stabilization program at the perimeter of the SWPS underpinning activities. The Assessment Team believes that the grout design andmethod of grout placement will be adequate in stabilizing the soil and will allow excavation for underpinning activities to proceed.

Assessment Team Observations - QA/QC

The Assessment Team with the assistance of a Stone & Webster welding specialist reviewed both Mergentime Corp. and Spencer, White and Prentis Corp. revisions to welding procedures incorporating the welding technique sheets. The Assessment Team had questions regarding the vertical progression of the weld, root openings, preheat requirements and welding to stainless steel. As a result of the first two questions, NIR No. 21 was issued. Based upon the information available, it is the Team's opinion that this nonconformance is procedural in nature. There are no hardware related nonconforming conditions.

As work commenced on the completion of the drift to piers CT1/12, MPQAD raised a question regarding the intent of allowable tolerances as described on the project documents. The Quality, Engineering and Construction groups undertook efforts to resolve the issue but nearly four days were required to gain a common understanding. The Assessment Team believes the attitudes and approach to resolution of this type of issue is appropriate. However, the nature of this issue was such that it should have been accomplished within a much shorter time frame.

J.O. No. 14358
Midland Plant
Units 1 & 2
Independent Assessment of Underpinning

Upon lifting of the change Document Stop Work Order, a large number of new/revised documents were issued. To assess the success of the distribution, the Assessment Team reviewed a sampling of newly transmitted documents at the FSO control station. All the documents reviewed were properly posted.

A review was conducted of crack monitoring IR's and various instrumentation IR's closed during the week. All the IR's were completed satisfactorily by certifed personnel.

Work Activity Packages

The following Work Activity Package overviews are in the open response stage or have been completed during the past week.

WAP No .	Title	Status
71	SWPS-Thru Anchor Bolt Holes	Closed 1/27/84

Nonconformance Identification Reports

The following Nonconformance Identification Reports (NIR's) remain open or have been closed during the past week.

NIR No.	Description	Date (Opened)	(Closed)
20	Concrete Admixture Dispenser Calibration	12/1/83	
21	Welding Procedures	1/28/84	

Open Items

Items discussed during meetings are categorized as follows:

OPEN ITEM - An item for which an action is required. The item will remain open until the required action has been taken. Tracking is required.

CLOSED ITEM - An item, usually brought forward by the Assessment Team, that is discussed and adequately responded to. No tracking is required.

INFORMATION ITEM - An item, brought forward to provide general background information regarding work, such as work status or an upcoming design change. No tracking is required.

OPINION ITEM - An opinion or suggestion, given by the Assessment Team expressing an alternate construction or quality assurance technique. The opinion or suggestion is given as a possible alternate that may facilitate an operation.

J.O. No. 14358
Midland Plant
Units 1 & 2
Independent Assessment of Underpinning

CLOSES ITEM - XX-XX - This notation identifies an action that closes a previously identified open item. Tracking of the open item stops.

The following is a listing of all Open items from the Daily Meeting Notes with Bechtel, the Weekly Meeting with MPQAD or the text of Weekly Reports. Carry-over items from past weeks which have been Closed this week are also listed.

Item No.	Description	Closure
WR 54, Pg.3	Weld Tech Sheets	Open
57-17	Wall Ties	Open
WR 58,Pg. 2	Lack of Drawing References	71-17
58-3	Tubular Steel Lagging	Open
64-7	QAP Review Program	Open
64-10	Trend Analysis	Open
WR 64, Pg.1	US Testing Corrective Action	Open
66-5Q	Request for IR Distribution	Open
70-2	Review of Crack Mapping Programs	Open
70-6	Close Out of Lessons Learned Action Items	Open
70-21	Document Transmittals	Open
71-4	US Testing Work Instructions	Open
71-8	Distribution and Implementation of Controlled Documents	Open
71-9	US Testing QA Manual	Open
71-17	Computerized Civil Drawing Register	Open

J.O. No. 14358
Midland Plant
Units 1 & 2
Independent Assessment of Underpinning

Item No.	Description	Closure
71-29	Use of "Retired" FCRs	Open
71-30	Overview of FSO Document Control Station	Open

R J Majeski
Project Engineer

R J Majeski for A S Lucks
Project Manager

Notes of Daily Meeting
Independent Assessment of Underpinning
Midland Plant Units 1 & 2
Consumers Power Company

Held at Midland Site
Midland, Michigan
January 23, 1984

Present For:

Consumers Power	Bechtel	MPQAD	Stone & Webster
G. Murray	J. Fisher	J. McMaster	P. Majeski
	E. Cvikl	R. Sevo	B. Lykens
	J. Gaydos		D. Benvie
			Parsons
			J. Oliveira

PURPOSE

This meeting is held each day to discuss items regarding the Independent Soils Assessment at the Midland Plant, Units 1 & 2.

DISCUSSION

Status Items

Item 71-1 - Work Status.

J. Fisher stated that work has begun on piers CT-1 and CT-12. Also drifting to piers Kc-4 and Kc-9 began this past weekend. (INFORMATION ITEM)

Item 71-2 - Rejacking of Piers.

J. Fisher reported that the W8 grillage was rejacked this weekend. Rejacking was performed to decrease the load on the west EPA and in turn decrease differential movement, but differential movement between the control tower and the EPA increased from 85 mils to 92 mils. Bechtel is presently evaluating procedures to prevent exceeding alert levels for upward structural movement. (INFORMATION ITEM)

Item 71-3 - SWPS Soil Grouting Plan.

The Assessment Team received a package of data for grouting at the SWPS including test grouting plans, grouting procedures and typical grout placement plans.The tests grouting program is scheduled to start on 1-24-84. (INFORMATION ITEM)

New Items

Item 71-4 - US Testing Work Instructions.

P. Majeski requested that the Assessment Team receive copies of work instructions formulated to date by US Testing. (OPEN ITEM)

Response Items

No response items were discussed.

Notes of Daily Meeting
Independent Assessment of Underpinning
Midland Plant Units 1 & 2
Consumers Power Company

Held at Midland Site
Midland, Michigan
January 24, 1984

Present For:

Consumers Power	Bechtel	MPQAD	Stone & Webster
G. Murray	J. Fisher	J. McMaster	P. Majeski
R. Wheeler	E. Cvikl	R. Sevo	B. Lykens
R. Wieland *	J. Gaydos		D. Benvie
	C. Knifton *		
			Parsons
			J. Oliveira

Part time *

PURPOSE

This meeting is held each day to discuss items regarding the Independent Soils Assessment at the Midland Plant, Units 1 & 2.

DISCUSSION

Status Items

Item 71-5 - Auxiliary Building Underpinning.

J. Fisher reported that drifting with the Moulten drilling machine to pier Kc-4 would begin today. Drifting to piers Kc-9, CT-1 and CT-12 is ongoing. (INFORMATION ITEM)

Item 71-6 - Rejacking of Piers.

J. Fisher reported that the W8 grillage remains on active jacks, although the acceptance criteria for lock off has been achieved (i.e. less then 10 mils of differential movement in 48 hours). The W8 grillage is being kept on active jacks in an effort to prevent differential movement between the west EPA and the control tower from exceeding alert levels . Differential movement measured today had decreased to 87 mils (from 92 mils measured yesterday). An FCR and MCR are in progress to allow the W8 grillage to remain on active jacks beyond the 48 hour period, but these documents were not issued until after the 48 hour hold period expired. As a result, an NCR was written. (INFORMATION ITEM)

Item 71-7 - US Testing Work Instructions.

The Assessment Team has started receiving work instructions from US Testing. J. Gaydos stated that as additional work instructions are prepared, they will be transmitted to the Assessment Team. The Assessment Team's preliminary comments on work instructions reviewed to date were given to Bechtel for evaluation. (Item 71-4 remains OPEN) (INFORMATION ITEM)

Notes of Daily Meeting
Independent Assessment of Underpinning
Midland Plant Units 1 & 2
Consumers Power Company

Held at Midland Site
Midland, Michigan
January 24, 1984

New Items

Item 71-8 - Distribution and Implementation of Controlled Documents.

P. Majeski asked for details on specific controls that are being implemented to ensure that:

1. All document transmittals have been received by the user.

2. Documents are correctly incorporated in the user's document control system.

J. Fisher stated that Bechtel will prepare a response to both of these questions. (OPEN ITEM)

Item 71-9 - US Testing QA Manual.

R. Lykens stated his preliminary review of US Testings QA manual revealed a significiant number of change notices to the QA manual. Use of the manual is very cumbersome due to the number of change notices. It was recommended that Bechtel consider revising the frequency for incorporating these change notices into the main body of the QA manual to reduce the number of attachments to the manual. Bechtel will respond later this week. (OPEN ITEM)

Item 71-10 - Differential Movement at W8 Grillage.

J. Oliveira questioned how work on piers CT-1 and CT-12 would be impacted if the alert level of 100 mils is exceeded at W8 grillage. R. Wheeler responded that engineering is evaluating options including raising the alert level value at W8 grillage to prevent disruption of work on piers CT-1 and CT-12. (CLOSED ITEM)

Response Items

No response items were discussed.

Notes of Daily Meeting
Independent Assessment of Underpinning
Midland Plant Units 1 & 2
Consumers Power Company

Held at Midland Site
Midland, Michigan
January 25, 1984

Present For:

Consumers Power	Bechtel	MPQAD	Stone & Webster
G. Murray	J. Fisher	J. McMaster	D. Benvie
R. Wheeler	E. Cvikl	R. Sevo *	W. Kilker
R. Wieland *	J. Gaydos		J. Springer
	C. Knifton		L. Rouen

Parsons

None

Part Time *

PURPOSE

This meeting is held each day to discuss items regarding the Independent Soils Assessment at the Midland Plant Units 1 & 2.

DISCUSSION

Status Items

Item 71-11 - Auxiliary Building Underpinning.

J. Fisher reported that work on piers CT-1 and CT-12 is on hold until differences in interpretation of installation and fabrication tolerances for top plate installations at CT-1 and CT-12 were clarified. Drifting to piers Kc-4 and Kc-9 continues. (INFORMATION ITEM)

Item 71-12 - Rejacking of Piers.

J. Fisher stated that the W8 grillage remains on active jacks. Upward differential movement measured at the W8 grillage has decreased to 82 mils. (INFORMATION ITEM)

Item 71-13 - Engineering Evaluation of Cracking in Auxiliary Building.

E. Cvikl reported that the crack survey in the Auxiliary Building is 80% complete. Completion of the crack survey is still scheduled for January 30, 1984. (INFORMATION ITEM)

New Items

Item 71-14 - Resolution of Construction Delays.

J. Springer requested details concerning the recent delay associated with the interpretation of allowable tolerances on the top plate installations at piers CT-1 & CT-12. J. Fisher and R. Wheeler explained that MPQAD questioned the interpretation of fabrication and installation tolerances. A meeting had been held between representatives of MPQAD, Engineering and FSO. Resolution of the interpretation is expected today. R. Wheeler

explained that the intent is to resolve issues such as this tolerance interpretation at the working level and in an expeditious manner so as to minimize impact on the work. However, if agreement cannot be reached, the matter will be elevated within the organization in order to reach a resolution. The Assessment Team believes the action taken is appropriate to the problem. (CLOSED ITEM)

Item 71-15 - SWPS Work Status.

J. Springer asked why the work on the SWPS underpinning has not resumed. J. Fisher replied that the construction schedule showed a delay of several days behind Auxiliary Building work start. Also, a procedural change was required in order to use another grout gel agent. The procedure revision is complete and a grout test area has been readied. The test installation will be done today or tomorrow. (CLOSED ITEM)

Item 71-16 - Computerized Civil Drawing Register.

W. Kilker stated that in the review of WR 70 the Team considers the development of the computerized civil drawing register an open item. Once the register is available for review the Assessment Team will act on this item. (OPEN ITEM)

Response Items

Item 71-17 - Lack of Drawing References.

Bechtel provided a status for an FCR which was identified in W.R. #58 as not having been posted to the correct drawing. The above referenced FCR was written as a one time deviation. After having been attached to the design drawing for 30 days, it was removed and filed in Central Document Control's register for retired documents per Bechtel procedures. The affected drawing was stamped with an "R" to alert future users that a retired document existed. The Assessment Team verified that the drawing was marked with the R stamp and that the FCR appeared in Central Document Control's register for retired documents. The Team is satisfied that document control procedures have been correctly implemented in dispositioning this FCR. (CLOSES ITEM WR # 58 pg. 2)

Notes of Daily Meeting
Independent Assessment of Underpinning
Midland Plant Units 1 & 2
Consumers Power Company

Held at Midland Site
Midland, Michigan
January 26, 1984

Present For:

Consumers Power	Bechtel	MPQAD	Stone & Webster
G. Murray	J. Fisher	J. McMaster	D. Benvie
	E. Cvikl	R. Sevo *	W. Kilker
	J. Gaydos		L. Rouen
			Parsons
			V. Madill
			B. Metros

PURPOSE

This meeting is held each day to discuss items regarding the Independent Soils Assessment at the Midland Plant Units 1 & 2.

DISCUSSION

Status Items

Item 71-18 - Auxiliary Building Underpinning.

J. Fisher reported that an FCN was issued yesterday to clarify interpretation of installation and fabrication tolerances for top plate installations on drift sets. As a result, work is proceeding for plate installation at piers CT-1 and CT-12. Intermittent activities continue on piers E13 and W13 and also on the west side level C walls. Drifting to piers Kc-4 and Kc-9 continues. (INFORMATION ITEM)

Item 71-19 - Rejacking of Piers.

J. Fisher reported that the E9 pier was put on active jacks yesterday The W8 grillage remains on active jacks. Upward differential movement measured at the W8 grillage has decreased to 75 mils. (INFORMATION ITEM)

Item 71-20 - US Testing Work Instruction.

As a clarification, L. Rouen stated that the Assessment Team should receive the US Testing Work Instructions only after they have been formally submitted . (Item 71-4 remains OPEN) (CLOSED ITEM)

Item 71-21 - US Testing QA Manual.

J. Gaydos reported that US Testing was in the process of issuing a new revision of their QA manual incorporating all change notices to date. In a meeting held yesterday, US Testing informed L. Rouen that in the future, frequency for incorporating change notices will be reduced from 6 months to 3 months. Item 71-9 will remain open until the Assessment Team receives the new revision to the QA manual. (INFORMATION ITEM)

Notes of Daily Meeting
Independent Assessment of Underpinning
Midland Plant Units 1 & 2
Consumers Power Company

Held at Midland Site
Midland, Michigan
January 26, 1984

Item 71-22 - Tubular Steel Lagging.

E. Cvikl reported that a DCN is forthcoming designating specific areas where filling of internal voids in tubular steel lagging will be required. An option to remove the lagging during backfilling in lieu of grouting will be allowed in the DCN. (Item 58-3 remains OPEN) (INFORMATION ITEM)

New Items

Item 71-23 - Installation of Piezometer in Boring BB-2.

J. Fisher stated that a piezometer will be installed in Boring BB-2. (INFORMATION ITEM)

Item 71-24 - SWPS Lagging Connection.

V. Madill questioned if all sets of the lagging had to be welded to the soldier piles in the SWPS. E. Cvikl stated that typically, clip angles are used to fasten lagging with every fourth lagging welded to the soldier pile. Welding of lagging is also required when the lagging is to be installed at an angle with the soldier pile. (CLOSED ITEM)

Response Items

No response items were discussed.

Notes of Daily Meeting
Independent Assessment of Underpinning
Midland Plant Units 1 & 2
Consumers Power Company

Held at Midland Site
Midland, Michigan
January 27, 1984

Present For:

Consumers Power	Bechtel	MPQAD	Stone & Webster
G. Murray	J. Fisher	J. McMaster	D. Benvie
	E. Cvikl	R. Sevo	W. Kilker
	J. Gaydos		L. Rouen
	W. Brandes		J. Springer
			Parsons
			V. Madill
			B. Metros

PURPOSE

This meeting is held each day to discuss items regarding the Independent Soils Assessment at the Midland Plant Units 1 & 2.

DISCUSSION

Status Items

Item 71-25 - Auxiliary Building Underpinning.

J. Fisher reported that installation of backpacking and lagging for the drift to pier Kc-9 has been completed. Reshoring and finger drifting to Kc-9 will begin today. Grouting of lagging behind pier E13 was completed yesterday. Drifting to pier Kc-4 with the Moulten Drilling Machine continues. (INFORMATION ITEM)

Item 71-26 - Rejacking of Piers.

J. Fisher reported that pier E9 was locked off yesterday. Pier E10 was put on active jacks to verify the load on the pier. The W8 grillage remains on active jacks. Upward differential movement measured at the W8 grillage has decreased to 71 mils. (INFORMATION ITEM)

Item 71-27 - SWPS - Test Grouting Program.

J. Fisher reported that the test grouting program had started yesterday. Only 3 of the 6 test holes were grouted yesterday due to delays associated with verifying gel times. The remaining 3 holes will be grouted today. The grouted area will then be excavated to determine extent of grout penetration. (INFORMATION ITEM)

Notes of Daily Meeting
Independent Assessment of Underpinning
Midland Plant Units 1 & 2
Consumers Power Company

Held at Midland Site
Midland, Michigan
January 27, 1984

Item 71-28 - Review of Crack Mapping Programs.

W. Kilker received CTL reports on the latest alert level cracks mapped in the Auxiliary Building and SWPS. G. Murray reported that CTL will be on site next week to review the engineering evaluation being prepared on the crack survey of the Auxiliary Building. (Item 70-2 remains OPEN) (CLOSED ITEM)

New Items

Item 71-29 - Use of "Retired" FCRs.

J. Fisher reported that work on the level C wales was on hold due to concerns associated with using a "retired" FCR. As the document control system is set up now, one time deviation FCR's are "retired" from the drawings after 30 days. If the FCR is made active at a later date, there is no procedure for controlling distribution of the FCR. Bechtel is evaluating options to resolve this problem including rewriting the FCR prior to the 30 day expiration date to extend the time limit for retirement of the document. (OPEN ITEM)

Item 71-30 - Overview of FSO Document Control Station.

L. Rouen stated that he would perform an overview of the FSO document control station today to verify that documents distributed after lifting of the Stop Work Order had been incorporated into the station. (OPEN ITEM)

Item 71-31 - New Assistant Project Manager.

J. Fisher introduced Mr. William Brandes as the new assistant project manager for FSO. (INFORMATION ITEM)

Response Items

No response items were discussed.

Notes of MPQAD Meeting
Independent Assessment of Underpinning
Midland Plant Units 1 & 2
Consumers Power Company

Held at Midland Site
Midland, Michigan
January 27, 1984

No MPQAD meeting was held this week.

STONE & WEBSTER MICHIGAN, INC.

P.O. BOX 2325, BOSTON, MASSACHUSETTS 02107

United States Nuclear Regulatory Commission
Midland Site Resident Office
Route 7,
Midland, Michigan 48640

January 25, 1984

J.O. No. 14358
Ref. MPF 70

Attention: Mr. Cook

DOCKET NO. 50-339/330
MIDLAND PLANT UNITS 1 & 2
INDEPENDENT ASSESSMENT OF UNDERPINNING
REPORT NO. 70

A copy of the Independent Assessment of Underpinning Weekly Report No. 70 for the period of January 15, 1984 through January 21, 1984 is enclosed with this letter. Included as attachments are the minutes of the daily meetings held during the week between members of the Assessment Team and Site Engineering, Construction, and Quality Assurance personnel.

If you have any questions with respect to this report please contact me at (617) 589-2067.

WE Kelton for AS Lucks

A. Stanley Lucks
Project Manager

Enclosures
ASL/pd

8403060423

J.O. No. 14358
Midland Plant
Units 1 & 2
Independent Assessment of Underpinning

Weekly Report No. 70

January 15, 1984 through January 21, 1984

Personnel on Site

Stone & Webster Michigan, Inc.

P. Majeski	1/17 - 1/21
D. Benvie	1/17 - 1/20
R. Lykens	1/17 - 1/21
J. Springer	1/15 - 1/17
L. Rouen	1/15 - 1/17
W. Kilker	1/15 - 1/17

Parsons Brinckerhoff, Michigan

J. Oliveira	1/17 - 1/21

Meetings Attended

Date	Represented	Purpose
1/16 - 1/20	Stone & Webster Bechtel Consumers Power Parsons	Daily Assessment Team Meeting
1/16	Bechtel Consumers Power Stone & Webster	Weekly Inter-organizational Meeting
1/17	Consumers Power Stone & Webster	FCR/FCN Resolution Status Meeting

Underpinning and Remedial Soils Activities - Construction

The Stop Work Order affecting soils work was lifted on January 19, 1984, following the satisfactory result of the Stone & Webster review of the Phase III FCR/FCN Resolution activities. Training and other preparatory work is being performed prior to resumption of physical work in the field. Rejacking of the W8 grillage was performed to reduce the differential settlement between the EPA and Control Tower. The crack mapping and engineering survey of cracks in the Auxiliary Building continued.

Assessment Team Observations

Concerns related to document control systems and procedures identified in a CP Co Management Corrective Action Request/Report and also expressed in a Stone & Webster (CIO) report were responded to by Consumers Power . The response addresses two primary issues, namely, the complexity of the control system and recurring clerical errors during the distribution process.

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Midland Plant
Units 1 & 2
Independent Assessment of Underpinning

The planned implementation of a computerized document control register and reduction in the number of controlled stations will simplify the document control system significantly. Additional checking of the files, staff reorganization and training, procedural changes and improved communications should significantly reduce clerical errors. The Assessment Team believes that these changes will improve the document control process.

Work Activity Packages

The following Work Activity Package overviews are in the open response stage or have been completed during the past week.

WAP No.	Title	Status
71	SWPS-Thru Anchor Bolt Holes	Open

Nonconformance Identification Reports

The following Nonconformance Identification Reports (NIR's) remain open or have been closed during the past week.

NIR No.	Description	Date (Opened)	Date (Closed)
20	Concrete Admixture Dispenser Calibration	12/1/83	

Open Items

Items discussed during meetings are categorized as follows:

OPEN ITEM - An item for which an action is required. The item will remain open until the required action has been taken. Tracking is required.

CLOSED ITEM - An item, usually brought forward by the Assessment Team, that is discussed and adequately responded to. No tracking is required.

INFORMATION ITEM - An item, brought forward to provide general background information regarding work, such as work status or an upcoming design change. No tracking is required.

OPINION ITEM - An opinion or suggestion, given by the Assessment Team expressing an alternate construction or quality assurance technique. The opinion or suggestion is given as a possible alternate that may facilitate an operation.

CLOSES ITEM -XX-XX - This notation identifies an action that closes a previously identified open item. Tracking of the open item stops.

J.O. No. 14358
Midland Plant
Units 1 & 2
Independent Assessment of Underpinning

The following is a listing of all Open items from the Daily Meeting Notes with Bechtel, the Weekly Meeting with MPQAD or the text of Weekly Reports. Carry-over items from past weeks which have been Closed this week are also listed.

Item No.	Description	Closure
WR 54, Pg. 3	Weld Tech Sheets	Open
57-17	Wall Ties	Open
WR 58, Pg. 2	Lack of Drawing References	Open
58-3	Tubular Steel Lagging	Open
64-7	QAP Review Program	Open
64-10	Trend Analysis	Open
WR 64, Pg. 1	US Testing Corrective Action	Open
65-19	Review of Phase III SWO Resolution	70-16
66-5Q	Request for IR Distribution	Open
69-15	Alert Level Cracks	70-2
69-19	Alert Level Cracks	70-2
70-2	Review of Crack Mapping Programs	Open
70-6	Close Out of Lessons Learned Action Items	Open
70-21	Document Transmittals	Open

W E Kahler
Project Engineer

W E Kahler for R S Leuthe
Project Manager

Notes of Daily Meeting
Independent Assessment of Underpinning
Midland Plant Units 1 & 2
Consumers Power Company

Held at Midland Site
Midland, Michigan
January 16, 1984

Present For:

Consumers Power	Bechtel	MPQAD	Stone & Webster
G. Murray	J. Fisher	J. McMaster	W. Kilker
	E. Cvikl		J. Springer
	J. Gaydos		
			Parsons
			None

PURPOSE

This meeting is held each day to discuss items regarding the Independent Soils Assessment at the Midland Plant Units 1 & 2.

DISCUSSION

Status Item

Item 70-1 - Phase III Resolution of SWO.

J. Fisher advised that MPQAD has begun the re-audit of the Soils area document control stations. The effort was delayed over the week-end because FSO decided to eliminate their document control of WJE data sheets. As of today, these documents will be site-controlled only at Resident Engineering and Central Document Control. (INFORMATION ITEM)

New Items

No new items were discussed.

Response Item

Item 70-2 - Review of Crack Mapping Programs.

G. Murray and E. Cvikl reported that CTL has been on-site and evaluated all 8 alert level cracks identified in the Auxiliary Building and SWPS during the week of January 8-14. CTL will issue a report (s) on their evaluation of those cracks. (Review of these reports as well as all other reports associated with crack mapping activities will be performed by the Assessment Team and tracked under this system.) (CLOSES ITEMS 69-15 and 69-19) (OPEN ITEM)

Notes of Daily Meeting
Independent Assessment of Underpinning
Midland Plant Units 1 & 2
Consumers Power Company

Held at Midland Site
Midland, Michigan
January 17, 1984

Present For:

Consumers Power	Bechtel	MPQAD	Stone & Webster
None	J. Fisher	J. McMaster	W. Kilker
	E. Cvikl	R. Sevo	J. Springer
	J. Gaydos		L. Rouen
			D. Benvie

Parsons

None

PURPOSE

This meeting is held each day to discuss items regarding the Independent Soils Assessment at the Midland Plant Units 1 & 2.

DISCUSSION

Status Items

Item 70-3 - Phase III Resolution of SWO.

J. Fisher reported that MPQAD has completed their verification of corrective action taken on document-related problems at two of the FSO Document Control Stations. The outstanding QARs are being closed and Stone & Webster (CIO) will likely be notified today that the CIO overview of the FSO control stations can be initated. J. Fisher added that once the SWO is lifted, FSO will obtain the "back-log on documents presently being held at the Field Document Control Center and enter them at the respective FSO Control Stations prior to physically resuming the construction work. (INFORMATION ITEM)

Item 70-4 - SWPS Soil Grouting Plan.

J. Fisher said that as a result of recent discussions with SMO, an alternate method is under consideration for stabilizing the soil at the perimeter of the SWPS underpinning excavation. This option would be to grout horizontally to approximately 1 ft. behind the lagging as the excavation progressed. (INFORMATION ITEM)

New Items

Item 70-5 - CTL Reports-Recommendations Follow Up.

During review of W.R. 69 two items relating to CTL's report on alert level cracks found on the El. 685' slab in the Control Tower were identified for tracking by the Assessment Team. One item concerns an engineering evaluation of the cracks and the other item a suggestion to perform extensometer measurements, these items will be tracked under OPEN ITEM 70-2. (CLOSED ITEM)

Notes of Daily Meeting
Independent Assessment of Underpinning
Midland Plant Units 1 & 2
Consumers Power Company

Held at Midland Site
Midland, Michigan
January 17, 1984

Item 70-6 - Close Out of Lessons Learned Action Items.

During review of W.R. 69, an open item was identified relating to lessons learned from the construction activities at the Auxiliary/Turbine Building. The Assessment Team will track the close out of the 11 action items (from an original list of 36) contained in the Lessons Learned Summary to be applied to the SWPS. (OPEN ITEM)

Response Items

No response items were discussed.

Notes of Daily Meeting
Independent Assessment of Underpinning
Midland Plant Units 1 & 2
Consumers Power Company

Held at Midland Site
Midland, Michigan
January 18, 1984

Present For:

Consumers Power	Bechtel	MPQAD	Stone & Webster	Parsons
G. Murray	J. Fisher	J. McMaster	D. Benvie	J. Oliveira
J. Schaub	E. Cvikl	R. Sevo	R. Lykens	
R. Wheeler	J. Gaydos		P. Majeski	

PURPOSE

This meeting is held each day to discuss items regarding the Independent Soils Assessment at the Midland Plant Units 1 & 2.

DISCUSSION

Status Items

Item 70-7 - Phase III Resolution of Stop Work Order.

Stone & Webster (CIO) started their overview of the 5 Soils Document Control Stations today. Pending the results of the overview, J. Fisher reported that the Stop Work Order could be lifted tommorow and actual work would start on Friday. (INFORMATION ITEM)

Item 70-8 - Rejacking of Piers.

J. Schaub reported that CP Co is in the process of notifying NRC that a nominal value of 84 mils uplift has been reached on the W8 grillage which may result in rejacking of the grillage. Performance of the EPA will be evaluated during rejacking to determine lock off values for the jacks. (INFORMATION ITEM)

Item 70-9 - SWPS Soil Grouting Plan.

J. Fisher reported that grouting for soil stabilization of the temporary back fill adjacent to the SWPS will be performed from inside the excavation as suggested by CP Co. Grouting horizontally to approximately 1 ft. behind the lagging will be performed from inside the excavation as the work progresses. (INFORMATION ITEM)

Item 70-10- Engineering Evaluation of Cracking in Auxiliary Building.

E. Cvikl reported that the crack survey of the Auxiliary Building south of G-line is in process. It is anticipated that the survey south of G-line will be completed this weekend. At that time, CTL will be called in to assist in evaluation of the survey data. The crack survey north of G line will commence thereafter. Completion of the crack survey in the entire Auxiliary Building is scheduled for January 30, 1984. (INFORMATION ITEM)

Notes of Daily Meeting
Independent Assessment of Underpinning
Midland Plant Units 1 & 2
Consumers Power Company

Held at Midland Site
Midland, Michigan
January 18, 1984

New Items

Item 70-11 - Near Term Construction Schedule for Underpinning Activities.

R. Wheeler inquired as to where work would start first after lifting of the Stop Work Order. J. Fisher responded that the following activities would get underway within the next week:

1. Work on piers CT-1 and CT-12
2. Drop pits to piers E16 and W16
3. Work on level C Waler
4. Drifting with the Molten Drilling Machine to pier Kc-4

(INFORMATION ITEM)

Response Items

No response items were discussed.

Notes of Daily Meeting
Independent Assessment of Underpinning
Midland Plant Units 1 & 2
Consumers Power Company

Held at Midland Site
Midland, Michigan
January 19, 1984

Present For:

Consumers Power	Bechtel	MPQAD	Stone & Webster
G. Murray	J. Fisher	R. Sevo	P. Majeski
J. Schaub	E. Cvikl		B. Lykens
R. Wheeler	J. Gaydos		D. Benvie
			Parsons
			J. Oliveira

PURPOSE

This meeting is held each day to discuss items regarding the Independent Soils Assessment at the Midland Plant Units 1 & 2.

DISCUSSION

Status Items

Item 70-12 - Phase III Resolution of Stop Work Order.

The five Soils Documents Control Stations satisfactorily passed the Stone & Webster (CIO) overview. The Stop Work Order will be lifted today. J. Fisher reported that prior to actually starting back to work on underpinning activities, all documents on the exception list plus any new documents at Central Document Control would be incorporated into all the Soils Document Control stations. FSO would then review the 5 stations to ensure that they are in compliance. Additionally, MPQAD will perform an evaluation of the 5 stations when FSO completes their review. Bechtel will check permits (i.e. drill, excavation, hold tags, etc.) at work areas to ensure they are in place and comply with the latest procedures. Actual underpinning work on the Auxiliary Building would begin on 1-21-84 while underpinning activities on the SWPS would resume some time next week. (INFORMATION ITEM)

Item 70-13 - Rejacking of Piers.

J. Fisher reported that the W8 grillage will be rejacked once the FCR establishing new criteria for upward structural movement has been processed. (INFORMATION ITEM)

Item 70-14 - CTL Report on Crack Mapping.

P. Majeski received CTL's reports on crack mapping performed at the SWPS and Auxiliary Building. G. Murray stated that Stone & Webster will be put on the distribution for all future CTL reports. (Item 70-2 remains OPEN) (CLOSED ITEM)

Notes of Daily Meeting
Independent Assessment of Underpinning
Midland Plant Units 1 & 2
Consumers Power Company

Held at Midland Site
Midland, Michigan
January 19 , 1984

New Items

Item 70-15 - Stone & Webster Comments on Bechtel Welding Tech.Sheets.

J. Fisher acknowledged receipt of Stone & Webster's comments on the welding tech sheets. Bechtel is presently reviewing these comments. (ITEM WR-54, pg. 3 remains OPEN) (CLOSED ITEM)

Response Items

Item 70-16 - Review of Phase III SWO Resolution.

The documents in the five soils related document control stations successfully passed the S&W, CIO review. The SWO for the soils related work may now be lifted. (CLOSES ITEM 65-19)

Notes of Daily Meeting
Independent Assessment of Underpinning
Midland Plant Units 1 & 2
Consumers Power Company

Held at Midland Site
Midland, Michigan
January 20, 1984

Present For:

Consumers Power	Bechtel	MPQAD	Stone & Webster
G. Murray	J. Fisher	J. McMaster	P. Majeski
	E. Cvikl		B. Lykens
	J. Gaydos		D. Benvie

Parsons

None

PURPOSE

This meeting is held each day to discuss items regarding the Independent Soils Assessment at the Midland Plant, Units 1 & 2.

DISCUSSION

Status Items

Item 70-17 - Lifting of Stop Work Order.

J. Fisher reported that equipment mobilization will begin today in preparation for starting back to work. Work activities anticipated to start tomorrow include work on piers CT-1 and CT-12 and drifting to Kc-4 and Kc-9. (INFORMATION ITEM)

Item 70-18 - Rejacking of Piers.

J. Fisher reported that the FCR establishing new criteria for upward structural movement was being routed this morning. Additionally, Mergentime's rejacking procedure will be revised to incorporate the new criteria from the FCR. Rejacking of the W8 grillage will be performed once the FCR has been issued and Mergentime's procedures have been revised and issued. (INFORMATION ITEM)

Item 70-19 - SWPS Soil Grouting Plan.

J. Fisher reported that a package of data related to grouting at the SWPS will be transmitted to CP Co. The package contains the grouting procedures, the proposed test grouting program and the plan for production grouting at the SWPS. (INFORMATION ITEM)

Notes of Daily Meeting
Independent Assessment of Underpinning
Midland Plant Units 1 & 2
Consumers Power Company

Held at Midland Site
Midland, Michigan
January 20, 1984

New Items

Item 70-20 - SCN for Welding Procedures.

J. Fisher stated that an SCN will be issued today releasing 2 welding procedures. Retraining of welders to the 2 welding procedures will be required. Bechtel has reviewed the Assessment Team's comments concerning Welding Tech Sheets which are a part of these procedures. The Team concurs that the comments are primarily of a procedure format nature. The Assessment Team believes that issuance of the SCN is appropriate. All comments will be discussed and resolved. (Item WR 54, pg. 3 remains OPEN) (CLOSED ITEM)

Item 70-21 - Document Transmittals.

P. Majeski requested that for the next few weeks, the Assessment Team be sent copies of the Document Transmittals for all documents distributed by Central Document Control subsequent to lifting the Stop Work Order. (OPEN ITEM)

Response Items

No response items were discussed.

Notes of MPQAD Meeting
Independent Assessment of Underpinning
Midland Plant Units 1 & 2

Held at Midland Site
Midland, Michiga
January 20, 1984

No MPQAD meeting was held this week.

STONE & WEBSTER MICHIGAN, INC.

P.O. BOX 2325, BOSTON, MASSACHUSETTS 02107

United States Nuclear Regulatory Commission
Midland Site Resident Office
Route 7,
Midland, Michigan 48640

January 17, 1984

J. O. No. 14358
Ref. MPF 69

Attention: Mr. Cook

DOCKET NO. 50-339/330
MIDLAND PLANT UNITS 1 & 2
INDEPENDENT ASSESSMENT OF UNDERPINNING
REPORT NO. 69

A copy of the Independent Assessment of Underpinning Weekly Report No. 69 for the period of January 8, 1984 through January 14, 1984 is enclosed with this letter. Included as attachments are the minutes of the daily meetings held during the week between members of the Assessment Team and Site Engineering, Construction, and Quality Assurance personnel.

If you have any questions with respect to this report please contact me at (617) 589-2067.

A. Stanley Lucks
Project Manager
WE Kitter for AS Lucks

Enclosures
ASL/pd

8402060420

J.O. No. 14358
Midland Plant
Units 1 & 2
Independent Assessment of Underpinning

Weekly Report No. 69

January 8, 1984 through January 14, 1984

Personnel on Site

Stone & Webster Michigan, Inc.

P.	Majeski	1/8 - 1/12
D.	Benvie	1/8 - 1/13
R.	Lykens	1/8 - 1/10
A.	Lucks	1/10 - 1/12
J.	Springer	1/11 - 1/14
L.	Rouen	1/10 - 1/14
W.	Kilker	1/10 - 1/14

Parsons Brinckerhoff, Michigan

J.	Oliveira	1/8 - 1/10
J.	Ratner	1/10 - 1/12
J.	Schraeder	1/10
B.	Metros	1/10

Meetings Attended

Date	Represented	Purpose
1/9-1/11,1/13	Stone & Webster Bechtel Consumers Power Parsons	Daily Assessment Team Meeting
1/9	Bechtel Consumers Power Stone & Webster	Weekly Inter-organizational Meeting
1/12	NRC Consumers Power Stone & Webster	Monthly Meeting with NRC

Underpinning and Remedial Soils Activities - Construction

The Stop Work Order issued October 21, 1983 continued in effect throughout the week. Rejacking and crack mapping activities were performed, as required, by the project procedures.

Assessment Team Observations

The Assessment Team reviewed the Quality Control Inspection Reports completed for the crack monitoring at the Auxiliary Building and SWPS. The review included an evaluation of the completeness and accuracy of the inspection records, verification of the inspectors' qualifications and certifications, and field verification of the mapping at randomly selected crack-mapped areas within both structures. All of the surveyed forms were properly completed, the field mapping was accurately depicted

on the data sheets, and the inspectors' certifications were in programmatic compliance.

The Team reviewed the CTL report (dated January 10, 1984) on the evaluation of alert level cracks reported in the Control Tower slab at El. 685'. In the Team's opinion, the issues have been thoroughly addressed. The conclusions drawn by CTL were that the cracks were related to volumetric changes in the concrete and not movements caused by the underpinning. However, it was recommended that Project Engineering quantify the factors that may have contributed to the crack formation and that periodic extensometer measurements be taken in the vicinity of two of the cracks.

The FSO summary report on "lessons learned" from the construction activities at the Auxiliary/Turbine building underpinning was received and reviewed by the Assessment Team. The report identified 36 areas where the original design and/or specifications/procedures have resulted in installation difficulties, unavoidable NCRs or significant time delays. Examples of the issues addressed in the report include Hilti bolts (torquing, embedment and abandonment), tolerances, welding, lagging installation, grout installation, load transfer wedges, plate bearing, and construction accessories. Twenty five of the 36 items have to date been addressed and appropriate changes made to the respective documents. These changes will apply to underpinning the remaining portions of the Auxiliary Building and the SWPS. Eleven items require further action to complete. The Assessment Team considers the identification, evaluations, and incorporation of these "lessons learned" into the project documents a vital activity. The Team believes the items identified in the report were significant in terms of impact on the work quality and/or timely completion of the work. The Team concurs with the actions taken and changes made to date.

Work Activity Packages

The following Work Activity Package overviews are in the open response stage or have been completed during the past week.

WAP No.	Title	Status
71	SWPS-Thru Anchor Bolt Holes	Open

Nonconformance Identification Reports

NIR No.	Description	Date (Opened)	Date (Closed)
20	Concrete Admixture Dispenser Calibration	12/1/83	

J.O. No. 14358
Midland Plant
Units 1 & 2
Independent Assessment of Underpinning

Open Items

Items discussed during meetings are categorized as follows:

OPEN ITEM - An item for which an action is required. The item will remain open until the required action has been taken. Tracking is required.

CLOSED ITEM - An item, usually brought forward by the Assessment Team, that is discussed and adequately responded to. No tracking is required.

INFORMATION ITEM - An item, brought forward to provide general background information regarding work, such as work status or an upcoming design change. No tracking is required.

OPINION ITEM - An opinion or suggestion, given by the Assessment Team, expressing an alternate construction or quality assurance technique. The opinion or suggestion is given as a possible alternate that may facilitate an operation.

CLOSES ITEM -XX-XX - This notation identifies an action that closes a previously identified open item. Tracking of the open item stops.

The following is a listing of all Open items from the Daily Meeting Notes with Bechtel, the Weekly Meeting with MPQAD or the text of Weekly Reports. Carry-over items from past weeks with have been Closed this week are also listed.

Item No.	Description	Closure
WR 54, Pg. 3	Weld Tech Sheets	Open
57-17	Wall Ties	Open
WR 58, Pg.2	Lack of Drawing References	Open
58-3	Tubular Steel Lagging	Open
64-7	QAP Review Program	Open
64-10	Trend Analysis	Open
WR 64, Pg. 1	US Testing Corrective Action	Open
65-19	Review of Phase III SWO Resolution	Open
66-5Q	Request for IR Distribution	Open

J.O. No. 14358
Midland Plant
Units 1 & 2
Independent Assessment of Underpinning

Item No.	Description	Closure
69-15	Alert Level Cracks	Open
69-19	Alert Level Cracks	Open

W E Killian
Project Engineer

W E Killian for A S Farber
Project Manager

Notes of Daily Meeting
Independent Assessment of Underpinning
Midland Plant Units 1 & 2
Consumers Power Company

Held at Midland Site
Midland , Michigan
January 9 , 1984

Fresent For:

Consumers Power	Bechtel	MPQAD	Stone & Webster
G. Murray	E. Cvikl	J. McMaster	P. Majeski
	J. Fisher	R. Sevo	D. Benvie
	J. Gaydos		R. Lykens
			Parsons
			J. Oliveira

PURPOSE

This meeting is held each day to discuss items regarding the Independent Soils Assessment at the Midland Plant Units 1 & 2.

DISCUSSION

Status Items

Item 69-1 - Stop Work Order Update.

J. Fisher reported that 3 QAR's (RS-00106, RS-00109, and RS-00110) had been issued as a result of Stone & Webster's (CIO) NIR 012 detailing nonconformances found during the audit of the 5 Document Control Stations associated with the Soils Remedial activities. J. Fisher stated that Bechtel had responded to QAR RS-00106 on 1/6/84. The remaining two QAR's will require dispositioning as part of the NIR resolution. Subsequent to satisfactory resolution of these QAR's the Soils Document Control stations will be available for overview by Stone & Webster CIO. It is not known at this time if the Management Corrective Action Request/Report issued last week to initiate evaluation of recurring document control problems will have to be resolved prior to lifting the Stop Work Order. (INFORMATION ITEM)

Item 69-2 - Rejacking of Piers.

J. Fisher reported that the average strain gage readings on Post #4 located at the W8 grillage showed a change of greater than 20%. E. Cvikl indicated that this situation may be the result of a malfunction of one of the two gages on this post. Engineering is evaluating whether rejacking will be required. (INFORMATION ITEM)

Item 69-3 - Cracking of the Control Tower el. 685' slab.

E. Cvikl stated that a report by CTL will be issued this week on the cracks found in the control tower on the el. 685'slab. E. Cvikl reported that preliminary investigation has shown the cracks have existed for some time. (INFORMATION ITEM)

Notes of Daily Meeting
Independent Assessment of Underpinning
Midland Plant Units 1 & 2
Consumers Power Company

Held at Midland Site
Midland, Michigan
January 9, 1984

New Items

Item 69-4 - Upward Structural Movement Criteria.

J. Fisher reported that as a result of last week's meeting with the NRC, new criteria for differential upward structural movement will be issued. These new values will be used for the interim period until the NRC has completed their review of Bechtel's proposed criteria. (INFORMATION ITEM)

Item 69-5 - Review of Weekly Report 67 for Open Items.

Weekly Report 67 was reviewed for open items. It was determined that all open items had been previously identified. (CLOSED ITEM)

Response Items

No response items were discussed.

Notes of Daily Meeting
Independent Assessment of Underpinning
Midland Plant Units 1 & 2
Consumers Power Company

Held at Midland Site
Midland, Michigan
January 10, 1984

Present For:

Consumers Power	Bechtel	MPQAD	Stone & Webster	Parsons
C. Murray	E. Cvikl	J. McMaster	P. Majeski	J. Oliveira
	J. Fisher	R. Sevo	W. Kilker	B. Metros
	J. Gaydos		D. Benvie	J. Ratner
			L. Rouen	J. Schraeder
			R. Lykens	

PURPOSE

This meeting is held each day to discuss items regarding the Independent Soils Assessment at the Midland Plant, Units 1 & 2.

DISCUSSION

Status Items

Item 69-6 - Stop Work Order Update.

J. Fisher reported that FSO was preparing for a reaudit of the 5 Soils Document Control Stations by MPQAD. Once MPQAD has completed their reaudit, the 5 stations will be available for overview by Stone & Webster (CIO). The latest forecasted date for lifting of the Stop Work Order is 1-16-84. (INFORMATION ITEM)

Item 69-7 - Rejacking of Piers.

J. Fisher reported that Pier W8 was rejacked due to a 20 percent change in stain gage readings at the columns bearing on the containment mat.(INFORMATION ITEM)

Item 69-8 - Cracking of the Control Tower El. 685' slab.

E. Cvikl provided an update on the control tower cracks (slab El. 685'). Based on CTL's site visit on 1-6-84, they believe that the cracks may be due to either volumetric changes, negative moments that may be due to slab fixity at the wall or settlement of the EPA prior to underpinning. (INFORMATION ITEM)

New Items

Item 69-9 - Molten Drilling Machine Demonstration.

J. Fisher stated that a demonstration of the Molten machine was held today. Holes were drilled to demonstrate the machines expediency for removing concrete. (INFORMATION ITEM)

Notes of Daily Meeting
Independent Assessment of Underpinning
Midland Plant Units 1 & 2
Consumers Power Company

Held at Midland Site
Midland, Michigan
January 10, 1984

Item 69-10 - Implementation of Document Control changes at Spencer, White & Prentis. (SWPS Subcontractor)

J. Ratner inquired if revised document control procedures implemented at Mergentime were also implemented at Spencer, White & Prentis. J. Fisher responded that the revised document control procedures are in effect with Spencer White & Prentis. (CLOSED ITEM)

Response Items

There were no response items discussed.

Notes of Daily Meeting
Independent Assessment of Underpinning
Midland Plant Units 1 & 2
Consumers Power Company

Held at Midland Site
Midland, Michigan
January 11, 1984

Present For:

Consumers Power	Bechtel	MPQAD	Stone & Webster	Parsons
R. Wisland	J. Fisher	J. McMaster	A. Lucks	J. Ratner
	E. Cvikl	R. Sevo	P. Majeski	
	J. Gaydos		W. Kilker	
	R. Cleary		D. Benvie	
			J. Springer	

PURPOSE

This meeting is held each day to discuss items regarding the Independent Soils Assessment at the Midland Plant Units 1 & 2.

DISCUSSION

Status Items

Item 69-11 - Stop Work Order Update.

J. Fisher reported that MPQAD is scheduled to begin their reaudit of the 5 Soils Document Control stations today. The register for one time deviations will be checked against the five stations during the reaudit. Lifting the Stop Work Order is still projected for 1-16-84 based on Stone & Webster (CIO) completing their overview this weekend. (INFORMATION ITEM)

Item 69-12 - Update on US Testing Corrective Action.

R. Cleary gave a status report on corrective actions being undertaken by US Testing. Completion schedules were provided for cross training of inspectors and preparation of work instructions. Item No. 16 (Field Document Control problems) from the original MPQAD audit in May 1983 should be closed today. Bechtel believes that US Testing has made good progress in implementing corrective actions. However, US Testing requires the additional time to implement the items referenced above. (WR 64 Pg.1 REMAINS OPEN) (INFORMATION ITEM)

Item 69-13 - Request for IR Distribution.

Closed IR's on crack mapping were received on 1-10-84. MPQAD is in progress of transmitting a group of closed IR's on instrumentation to Stone & Webster. (ITEM 66-50 REMAINS OPEN until the Assessment Team receives the requested closed instrumentation IR's and enough additional new IRs to assure the Team is on distribution) (INFORMATION ITEM)

Notes of Daily Meeting
Independent Assessment of Underpinning
Midland Plant Units 1 & 2
Consumers Power Company

Held at Midland Site
Midland, Michigan
January 11, 1984

New Items

Item 69-14 - Grouting at the SWPS.

Grouting the temporary backfill material adjacent to the Service Water Pump Structure and a proposed test grouting program were discussed. The test grouting program will performed at an off site area simulating soil conditions at the SWPS. The purpose of the test program will be to establish general grout pressure and volume guidelines in order to minimize the possiblity of contamination of the dewatering wells during actual grouting. (INFORMATION ITEM)

Item 69-15 - Alert Level Cracks in the EPA and SWPS.

E. Cvikl reported that 3 alert level cracks were found yesterday-two in the West EPA on the el. 674' slab, and one on the E-1 wall in the SWPS. CTL has been notified to evaluate the nature of the cracks. (OPEN ITEM)

Response Items

No response items were discussed.

Notes of Daily Meeting
Independent Assessment of Underpinning
Midland Plant Units 1 & 2
Consumers Power Company

Held at Midland Site
Midland, Michigan
January 12, 1984

No meeting was held on this date.

Notes of Daily Meeting
Independent Assessment of Underpinning
Midland Plant Units 1 & 2
Consumers Power Company

Held at Midland Site
Midland, Michigan
January 13, 1984

Present For:

Consumers Power	Bechtel	MPQAD	Stone & Webster	Parsons
G. Murray	J. Fisher	R. Sevo	W. Kilker	None
	E. Cvikl	J. McMaster	D. Benvie	
	J. Gaydos		L. Rouen	
			J. Springer	

PURPOSE

This meeting is held each day to discuss items regarding the Independent Soils Assessment at the Midland Plant Units 1 & 2.

DISCUSSION

Status Item

Item 69-16 - SWO Update.

J. Fisher reported that the Soils Document Control Stations are ready for a reaudit by MPQAD. Also, CP Co will make the evaluation today as to the need for a complete audit of the Field Document Control Center (Station 59) prior to lifting the Stop Work Order. (INFORMATION ITEM)

New Items

Item 69-17 - Check for Cracks on Roof of EPA's.

E. Cvikl reported that some of the roofing on the east and west EPA's had been removed to check for cracking. No cracking was observed on the roof slab of the east EPA, however, small hairline cracks were found on the west EPA roof slab. (INFORMATION ITEM)

Item 69-18 - Engineering Evaluation of Cracking in Auxiliary Building.

J. Springer asked for a status update on the Resident Engineering crack survey program. E. Cvikl responded that as a result of the meeting last week with the NRC, Resident Engineering has submitted to CP Co a proposed methodology for performing an engineering evaluation of cracking in the EPA's, Control Tower and Auxiliary Building. The evaluation would start south of the G-line in the Auxiliary Building and then proceed north of the G-line. The cracks judged to be significiant will be incorporated into sketches that will in-turn serve as input into a crack survey report on the structures. (INFORMATION ITEM)

Item - 69-19 - Alert Level Cracks in the SWPS and Auxiliary Building.

E. Cvikl reported that 3 alert level cracks were found in the SWPS on 1-11-84. Also, one alert level crack was found in the Auxiliary Building. CTL will evaluate and report. (OPEN ITEM)

Notes of Daily Meeting
Independent Assessment of Underpinning
Midland Plant Units 1 & 2
Consumers Power Company

Held at Midland Site
Midland, Michigan
January 13, 1984

Item 69-20 - CTL Report-Cracking on the Control Tower El. 685' Slab.

The Independent Assessment Team received CTL's report evaluating the cracks found last week on the El. 685' slab of the Control Tower. (INFORMATION ITEM)

Item 69-21 - NRC Request for Crack Mapping Update.

W. Kilker reported that the NRC, in the public meeting of 1-12-84, requested that CP Co provide an update on crack mapping at the February public meeting. In particular, the NRC is interested in discussions on numerous alert leve. cracks that have recently been identified and how crack map data recorded independently by Bechtel, CTL and WJE is maintained and used by Engineering in monitoring the structures. (INFORMATION ITEM)

Item 69-22 - Weekly Report # 68.

Weekly Report 68 was reviewed for potential open items. No new open items were found. (CLOSED ITEM)

Response Items

No response items were discussed.

Notes of MPQAD Meeting
Independent Assessment of Underpinning
Midland Plant Units 1 & 2
Consumers Power Company

Held at Midland Site
Midland, Michigan
January 13, 1984

No MPQAD meeting was held this week.

Hawkins

AUG 2 9 1983

Docket No. 50-329; 50-330
Docket No. 50-461; 50-462

Ms. Billie P. Garde, Director
Citizens for Accountable Government
Government Accountability Project
Institute for Policy Studies
1901 Que Street
Washington, DC 20009

Dear Ms. Garde:

I want to again thank you for your assistance in arranging for the depositions of Individuals C and H. Your efforts in that regard are appreciated.

On August 18, 1983, we transmitted the transcripts of both depositions to you for your review. Members of my staff have reviewed both of these transcripts to identify unresolved issues which require further action on our part. To that end, our review of Individual H's deposition has identified two matters involving you. Specifically, you stated on page 55 (lines 9-14) that it would be to our benefit to discuss GAP's knowledge of the Zack issues with you or a member of your staff and you stated on page 64 (lines 7-19) your concerns regarding the inadvertent or careless ordering of materials by Zack and the supply of those materials to utilities. We recognize that your knowledge regarding the Zack issues is of value to our effort and we welcome the opportunity to share your insight into them.

Accordingly, and in keeping with our intent to conduct a complete inspection of this matter we would like to interview you to acquire any information which you believe could adversely affect installed HVAC systems or components at either the Midland or Clinton facilities. You may bring other members of GAP to the interview who you believe can contribute to our special inspection. In order to have a record of your comments, we plan to have the interview transcribed by a court reporter.

Additionally, as agreed between you and members of my staff during the deposition of Individual H, we are in need of legible copies of the 44 attachments to Individual H's original affidavit. These copies are necessary to assure that we are fully cognizant of all items of concern.

8309020395

OFFICE ▶
SURNAME ▶
DATE ▶

Please contact me or Mr. Duane Danielson of my staff as soon as possible to arrange a date for your interview.

Sincerely,

"Original Signed by R. L. Spessard"

R. L. Spessard, Director
Division of Engineering

cc: T. Rehm, EDO
Mr. W. C. Gerstner
Illinois Power Co.
Philip L. Willman, Esq.
Assistant Attorney General
Environmental Control Div.
Reed Newman, Esq., Assistant
Attorney General
Gary N. Wright, Manager
Nuclear Facility Safety
Jean Foy, Prairie Alliance
Mr. James W. Cook
Consumers Power Co.
The Honorable Charles Bechhoefer, ASLB
The Honorable Jerry Harbour, ASLB
The Honorable Frederick P. Cowan, ASLB
The Honorable Ralph S. Decker, ASLB
William Paton, ELD
Michael Miller
Ronald Callen, Michigan
Public Service Commission
Myron B. Cherry
Barbara Stamiris
Mary Sinclair
Wendell Marshall
Colonel Steve J. Gadler (P.E.)
Howard Levin (TERA)
Lynne Bernabei, Government
Accountability Project
DMB/Document Control Desk (RIDS)
Resident Inspector, R III
Clinton/Midland

Billie called RIII (B. Little) on 9/1/83 - arrangement for interview (1) Chicago (2) Midland

Discussed w Rehm, OK to send this out over RIII signature. RBL 8/26

OFFICE	R III	R III	R III	R III	R III	R III	R III
SURNAME	Hawkins/lc	Danielson	Little	Harrison	Spessard	Lewis	Davis/Rehm
DATE	8/26/83	8/26/83	8/26/83	8/26/83	8/29/83	8/26/83	8/26

AUG 24 1983

Docket No. 50-329
Docket No. 50-330

Consumers Power Company
ATTN: Mr. James W. Cook
Vice President
Midland Project
1945 West Parnall Road
Jackson, MI 49201

Gentlemen:

This refers to a telephone discussion between Mr. D. Miller of your staff and me on August 24, 1983, and documents the matters discussed.

Region III has begun a special inspection of The Zack Company's present and past construction activities at Midland and included in this effort is a review of concerns brought to out attention by former Zack employees. This special inspection effort is intended to provide us additional confidence that the installed HVAC systems and components at the Midland plants are acceptable and that you are implementing an adequate QA program with regard to ongoing HVAC activities.

One facet of this effort involves a materials sampling program covering installed HVAC ductwork and hangers from six safety-related systems and from stock materials. Although out sampling program is still being developed, we expect that approximately 60 samples will be taken. These samples will be taken under our direction and will be sent to an independent laboratory for analysis to verify chemical compositions and strength in accordance with the material specification requirements. The cost of these analyses will be funded by the NRC.

For your information, and to help you coordinate your efforts in assisting us during the sampling process, we plan to implement this program at Midland during the week of August 29, 1983. Please contact Mr. Duane Danielson of my staff (312/932-2610) if you have further questions regarding this matter. We appreciate your cooperation.

Sincerely,

Original Signed by R. L. Spessard

R. L. Spessard, Director
Division of Engineering

RIII Davis 8-24-83
RIII Keppler 8-24-83

8408220249

OFFICE	cc: See Attached.	RIII	RIII	RIII	RIII	RIII
SURNAME	RIII Spessard/jkm	RIII Key	Hawkins	Danielson	Little	Warnick	Lewis
DATE	8-24-83	8-24-83	8-24-83	8-24-83	8-24-83	8-24-83	8-24-83

NRC FORM 318 (10-80) NRCM 0240 OFFICIAL RECORD COPY USGPO 1980—329-1

DISTRIBUTION:

cc: DMB/Document Control Desk (RIDS)
Resident Inspector, RIII
The Honorable Charles Bechhoefer, ASLB
The Honorable Jerry Harbour, ASLB
The Honorable Frederick P. Cowan, ASLB
The Honorable Ralph S. Decker, ASLB
William Paton, ELD
Michael Miller
Ronald Callen, Michigan
Public Service Commission
Myron M. Cherry
Barbara Stamiris
Mary Sinclair
Wendell Marshall
Colonel Steve J. Gadler (P.E.)
Howard Levin (TERA)
Billie P. Garde, Government
Assountability Project
Lynne Bernabei, Government
Accountability Project

OFFICE ▶							
URNAME ▶							
DATE ▶							

AUG 18 1983

Ms. Billie P. Garde, Director
Citizens for Accountable Government
Government Accountability Project
Institute for Policy Studies
1901 Que Street
Washington, D. C. 20009

Dear Ms. Garde:

Enclosed for your information and use are the depositions of Individuals C and H, which were taken by the NRC on August 4 and 11, 1983, respectively. As agreed at the depositions (and reiterated in your August 5, 1983, letter to Mr. J. Harrison of this office), we intend to protect the identity of the subject witnesses to the best of our ability. To the extent we need to make use of or reference to the depositions in any documents we issue, we will do so in a manner that has the least potential for disclosing the identity of the deponents. We cannot, however, agree to seek your clearance before we make use of any excerpts from the depositions in inspection reports or other documents.

Regarding your request concerning future arrangements for the location of interviews with your clients, we will attempt to accommodate the deponents' preferences to the extent possible. We believe that we have proceeded in this manner on the depositions already conducted.

We appreciate your cooperation in facilitating the taking of these depositions.

Sincerely,

Original signed by
James G. Keppler

James G. Keppler
Regional Administrator

Enclosures: As Stated

cc w/o enclosures:
T. Rehm, EDO
S. Burns, ELD

8406220072

OFFICE	RIII	RIII	RIII	RIII	RIII		
NAME	Speegard/ikm	Warnick	Lewis	Davis	Keppler		
DATE	8-17-83	8-17-83	8-12-83	8-18-83	8-18-83		

NRC FORM 318 (10-80) NRCM 0240 OFFICIAL RECORD COPY

UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION III
799 ROOSEVELT ROAD
GLEN ELLYN, ILLINOIS 60137

Hopkins

AUG 4 1983

MEMORANDUM FOR: D. G. Eisenhut, Director
Division of Licensing

FROM: R. L. Spessard, Director
Division of Engineering - Region III

SUBJECT: REQUEST TO REVIEW THE STRUCTURAL DESIGN ADEQUACY OF THE MIDLAND AND CLINTON HVAC SYSTEMS

As discussed between Mr. D. H. Danielson of my staff and Mr. R. J. Bosnak of the NRR staff, we request that NRR perform a review of the HVAC design methodology for the Midland and Clinton facilities. These reviews should be of the same type and magnitude as your recent effort (TIA 82-04) relative to the LaSalle HVAC system. As you know, TERA Corporation is conducting an Independent Design and Construction Verification Program (IDCVP)at the Midland Plant. One of these systems is the control room HVAC system and you may wish to factor this into your review.

We intend to use the results of your review to complement our onsite inspection efforts at both facilities. The combination of our respective efforts will address (1) the adequacy of the HVAC systems as they are constructed and (2) allegations of former Zack employees as they relate to Midland and Clinton. We are projecting that our inspection efforts at Midland will conclude on November 1, 1983, and on January 1, 1984 at Clinton. If your schedule allows, we believe it would be to NRC's benefit to have your effort completed by those dates also.

Our contact for coordination of Region III's actions concerning this matter is Mr. Danielson (FTS 384-2610). Please contact us if we can provide you further information regarding this request.

R. L. Spessard

R. L. Spessard, Director
Division of Engineering

cc: G. M. Holahan, NRR
R. J. Bosnak, NRR
R. H. Wessman, NRR
E. L. Jordan, IE
J. M. Taylor, IE
Directors, Div.Engr, RI, RII,
RIV and RV

8408220035

Davidson

UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION III
799 ROOSEVELT ROAD
GLEN ELLYN, ILLINOIS 60137

JUL 26 1983

Docket No. 50-329
Docket No. 50-330

Ms. Billie P. Garde, Director
Citizens for Accountable Government
Government Accountability Project
Institute for Policy Studies
1901 Que Street
Washington, DC 20009

Dear Ms. Garde:

In the interest of providing a fresh and independent assessment of the adequacy of the Zack Company's construction activities at Midland, the Region III Administrator directed the Region's Division of Engineering to conduct a thorough inspection of site HVAC construction activities including the concerns brought to our attention by former employees. Accordingly, we have begun the onsite inspection of Zack's activities and the detailed review of the pertinent affidavits which were provided to us by GAP so that an onsite inspection of these concerns can be conducted where appropriate.

One of the affidavits we are reviewing is a response to an investigation conducted by Region III personnel which is documented in Report No. 50-329/80-10; 50-330/80-11. The affidavit was filed with us prior to the issuance of Report No. 50-329/82-15; 50-330/82-15. This report documents the results of the follow-up of open items from Report No. 50-329/80-10; 50-330/80-11. We believe that Report No. 50-329/82-15; 50-330/82-15 addresses the substantive technical issues expressed by the affiant, and are enclosing a copy of this inspection report with the request that you make it available to him for review. If after reviewing this report the affiant still has unresolved issues, then we would like to meet with him to discuss his specific concerns.

Please advise Mr. Duane Danielson of this office at (312)932-2610 if you are unable to contact the affiant or if you have any questions regarding this letter. We appreciate your cooperation in this matter.

Sincerely,

"Original Signed by R. L. Spessard"

R. L. Spessard, Director
Division of Engineering

Enclosure: Report Nos.
50-329/82-15;
50-330/82-15

cc w/o encl:
Consumers Power Company
ATTN: Mr. James W. Cook
DMB/Document Control Desk (RIDS)
Resident Inspector, RIII
The Honorable Charles Bechhoefer, ASLB
The Honorable Jerry Harbour, ASLB
The Honorable Frederick P. Cowan, ASLB
The Honorable Ralph S. Decker, ASLB
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Accountability Project

OFFICE ▶	R III	R III	R III	R III	R III	R III	R III
NAME ▶	Hawkins/lc	Danielson	Harrison	Little	Warnick	Spessard	Davis/Kepple
DATE ▶	7/26/83	7/26	7/26/83	7/26	7/26	7/26	7/24/83

NRC FORM 318 (10-80) NRCM 0240 OFFICIAL RECORD COPY

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

February 23, 1984

Docket Nos.: 50-289,483,443/444
382,50-275/323,440/441
352/353,329/330,322,
247/286,358,482
529/530

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MEMORANDUM FOR: Chairman Palladino
Commissioner Gilinsky
Commissioner Roberts
Commissioner Asselstine
Commissioner Bernthal

FROM: Darrell G. Eisenhut, Director
Division of Licensing

SUBJECT: FIRE RESEARCH RESULTS CONCERNING FIRES IN ELECTRICAL CABINETS IN THE CONTROL ROOM
(BOARD NOTIFICATION 84~~-033~~ 034)

In accordance with present NRC procedures regarding Board Notifications, the enclosed memorandum from Richard Vollmer to Darrell Eisenhut, dated February 6, 1984, is provided for your information. This information is applicable to all nuclear power plants. By copy of this memorandum, we are notifying appropriate boards and parties.

This information relates to the staff's preliminary review of experimental results concerning the effects of fire on electrical equipment in cabinets located in the control room and other nuclear plant locations. The experiments were conducted by Sandia Laboratories as part of a fire protection research program initiated by the NRC.

As stated in the enclosure, the results of the Sandia experiments are reported in, "Fire Safety of Electrical Cabinets", R. B. Williamson, F. W. Mowrer, and F. L. Fisher, November 1983, revised January 1984. The summary of this report states that direct damage to the cabinets and their contents during the experiments suggests the need for greater scrutiny, especially if redundant safety systems are located within the same or adjacent cabinets.

The staff's preliminary review of the test report indicates that immediate action is not required because of the three reasons given in the enclosure. Further evaluation of the test data is required to determine if there is a safety concern in the level of fire protection provided for electrical cabinets.

The staff will keep you informed regarding the resolution of this issue.

Darrell G. Eisenhut, Director
Division of Licensing

Enclosure:
As Stated

cc: See Next Page

8402290006

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

FEB 6 1984

MEMORANDUM FOR: Darrell G. Eisenhut, Director
Division of Licensing

FROM: Richard H. Vollmer, Director
Division of Engineering

SUBJECT: BOARD NOTIFICATION REGARDING FIRE RESEARCH RESULTS CONCERNING FIRES IN ELECTRICAL CABINETS IN THE CONTROL ROOM

In 1982, the NRC initiated a fire protection research program to determine how electrical equipment in cabinets located in the control room and other plant locations may be affected by fire and fire suppressants. As part of this research effort, Sandia Laboratories conducted two experiments in October 1982 and February 1983 which exposed an aluminum electrical equipment cabinet to fire. The results of these experiments are reported in "Fire Safety of Electrical Cabinets", R. B. Williamson, F. W. Mowrer, and F. L. Fisher, November 1983, revised January 1984. In the Summary of this report the authors state:

"The two experiments described above have demonstrated the potential for serious fires in electrical cabinets resulting from a "typical" transient ignition source. The direct damage to the cabinets and their contents during these experiments suggests the need for greater scrutiny, especially if redundant safety systems are located within the same or adjacent cabinets. The flashover which occurred in the room surrounding the cabinet during the second experiment is considered to have important safety implications for new as well as operating reactors"

Our requirements recognized the difficulty of predicting the magnitude of damage in the control room that may result from a fire or from fire suppressants. To account for this uncertainty, we normally require an alternate shutdown capability independent of the control room.

Our preliminary review of the test report indicates that immediate action is not required, because:

1. The ignition source used for these experiments was a trash fire composed of loosely packed paper in two polyethylene bags, loosely packed paper in a 32-gallon polyethylene waste container, as well as two cardboard boxes with polyethylene foam packing material or loosely packed paper. We consider the accumulation of such combustibles in the control room to be a low probability event because the control room is a restricted area that is continuously manned by licensed operators and administrative controls prohibit the accumulation of unnecessary material in the area.

8402230316

cc: OPE
OGC
EDO
SECY (2)

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Callaway (Gleason, Bright, Kline)
Palo Verde 2 & 3 (Lazo, Callihan, Cole)
Waterford 3 (Wolfe, Foreman, Jordan)
Byron 1 & 2 (Miller, Callihan, Cole)
Catawba 1 & 2 (Kelley, Foster, Purdom)
Clinton (Clark, Ferguson, Paris)
Comanche Peak 1 & 2 (Bloch, Jordan, McCollum)
Limerick 1 & 2 (Brenner, Cole, Morris)
Midland 1 & 2 (Beckhoefer, Cowan, Harbour)
Perry 1 & 2 (Bloch, Bright, Kline)
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Shoreham (Brenner, Carpenter, Morris)
Wolf Creek (Wolfe, Anderson, Paxton)

The Atomic Safety and Licensing Appeal Boards for:
Diablo Canyon 1 & 2 (Moore, Johnson, Buck)
Waterford 3 (Kohl, Johnson, Wilber)
Callaway 1 (Rosenthal, Edles, Gotchy)
TMI-1 (Edles, Buck, Gotchy, Kohl)

All Parties for above proceedings

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

February 16, 1984

PRINCIPAL STAFF			
DA	MRR		MRR
D/DA		DE	
A/DA			
	MRR		
			MRR

Docket Nos. 50-289,483,443/444,
382,50-275/323,440/441
352/353,329/330,322,
247/286

MEMORANDUM FOR: Chairman Palladino
Commissioner Gilinsky
Commissioner Roberts
Commissioner Asselstine
Commissioner Bernthal

FROM: Darrell G. Eisenhut, Director
Division of Licensing

SUBJECT: TASK ACTION PLAN FOR USI A-17 "SYSTEMS INTERACTION PROGRAM" BOARD NOTIFICATION (BN 84-33)

In accordance with the NRC procedure for Board Notification, the enclosed Task Action Plan for USI A-17 is being provided directly to the Commission for information. This information is applicable to all nuclear power plants. The appropriate Boards and parties are being informed by copy of this memorandum.

Information on the subject of USI A-17 was previously provided in Board Notifications 83-17, 44, 57, 105 and 126. The enclosed Task Action Plan for USI A-17, recently approved by staff management, contemplates development of the staff's technical resolution of USI A-17 by the end of fiscal year 1985. A schedule of program milestones appears on page A-17/17 of the Plan.

Darrell G. Eisenhut, Director
Division of Licensing, NRR

Enclosure:
Memorandum dated 1/9/84 (T. Speis (NRC) to H. Denton (NRC)) forwarding Task Action Plan, "Systems Interaction in Nuclear Power Plants (Task A-17)", January 1984

MAR 2 1984

8401190068

cc: OPE
OGC
EDO
SECY (2)

The Atomic Safety and Licensing Boards for:

Byron (Miller, Callihan, Cole)
Callaway (Gleason, Bright, Kline)
Catawba 1 & 2 (Kelley, Foster, Purdom)
Comanche Peak 1 & 2 (Bloch, Jordan, McCollom)

Limerick 1 & 2 (Brenner, Cole, Morris)
Midland 1 & 2 (Bechhoefer, Cowan, Harbour)
Palo Verde 2 & 3 (Lazo, Callihan, Cole)
Perry 1 & 2 (Bloch, Bright, Kline)
Seabrook 1 & 2 (Hoyt, Harbour, Luebke)
Shoreham (Brenner, Carpenter, Morris)
Wolf Creek (Wolfe, Anderson, Paxton)

The Atomic Safety and Licensing Appeal Boards for:

Callaway 1 (Rosenthal, Edles, Gotchy)
Diablo Canyon 1 & 2 (Moore, Johnson, Buck)

THI-1 (Edles, Buck, Gotchy, Kohl)

All parties for the above proceedings

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