

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

February 14, 1983

AFFIDAVIT OF

Joseph E. Springer

My name is Joseph E. Springer I am employed by Stone & Webster Engineering Corporation as Structural Engineer.

I am currently assigned to the team which is conducting an independent assessment of soils work 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, Bechtel, or the Mergentime Company relating to soils of underpirding. I have never been employed by Consumers Power Company, Bechtel, or Mergentime Company. I do not own any shares of Consumers Power Company, Bechtel, or Mergentime 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, Bechtel, or Mergentime 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, Bechtel, or Mergentime Company.

Sworn and Subscribed Before Me This 27th day of July 1983

Christie M. Knott

Notary Public

ARAPAHOE COUNTY; ENGLEWOOD, COLORADO

My Commission Expires 8-6-86

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Docket No. 50-329 OM
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50-330 OL

February 14, 1983

AFFIDAVIT OF

W.C. Craig

My name is W.C. Craig. I am employed by Stone & Webster Engineering Corporation as Senior Structural Engineer.

I am currently assigned to the team which is conducting an independent assessment of soils work 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, Bechtel, or the Mergentime Company relating to soils of underpinning. I have never been employed by Consumers Power Company, Bechtel, or Mergentime Company. I do not own any shares of Consumers Power Company, Bechtel, or Mergentime 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, Bechtel, or Mergentime 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, Bechtel, or Mergentime Company.

Sworn and Subscribed Before Me This 5th day of August 1983

Catherine A. Labucce

Notary Public

Suffolk County, Massachusetts

My Commission Expires November 8, 1985

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

February 11, 1983

AFFIDAVIT OF MICHAEL J. ABRAHAMS

My name is Michael J. Abraham I am employed by Parsons Brucknerhoff Quade & Douglas, Inc.
as Manager, Structural Department.

I am currently assigned to the team which is conducting an independent assessment of soils work 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, Bechtel, or the Mergentime Company relating to soils or underpinning. I have never been employed by Consumers Power Company, ~~Bechtel~~, ^{Bechtel} or Mergentime Company. I do not own any shares of Consumers Power Company, Bechtel, or Mergentime 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, Bechtel, or Mergentime 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, Bechtel, or Mergentime Company. I worked for Bechtel in 1964-1965, San Francisco, California.

Sworn and Subscribed Before Me This 4 Day of APR 198³

Michael J. McKinney

Notary Public
Jackson County, Michigan NEW YORK, NEW YORK

My Commission Expires March 30, 1985

MICHAEL J. MCKINNEY
NOTARY PUBLIC, State of New York
No. 41-2628960
Qualified in Queens County
Certificate Filed in New York County
Commission Expires March 30, 1985

3361B
April 1983

SPRINGER, JOSEPH E.

STRUCTURAL ENGINEER
STRUCTURAL DIVISION

EDUCATION

University of Colorado, B.S. in Civil Engineering - 1973

University of Colorado, M.S. in Civil Engineering - 1982

LICENSES AND REGISTRATIONS

Professional Engineer - Colorado, Nebraska, Oregon

EXPERIENCE SUMMARY

Mr. Springer is a Structural Engineer in the Structural Division at the Denver Operations Center. He is currently coordinating the preparation and checking of pipe support calculations for the Nine Mile Point II Nuclear Project. Recently, he was the Lead Structural Engineer (on-site) on a nuclear power plant for Public Service Company of Colorado. His current assignment involves the design of pipe support for plant piping. Previous assignments have included the design of a greenhouse for Northern States Power Company; the design of a technical support center for Portland General Electric Company; the design of a radwaste container storage facility, design of duct and pipe supports, design of fireproofing systems and design of shielding for radiological protection for Omaha Public Power District; stability analysis using post-tensioned anchors on the Osage Hydroelectric Project, Bagnell Dam for Union Electric Company; design of an ash pond, pipe supports, and foundations for the coal conveyor system on Wyodak Generating Station; and structural design of Rock Island Hydroelectric Project for PUD No. 1, Wenatchee, Washington.

Previously, he was employed by Stearns-Roger Incorporated, Denver, Colorado as a Structural Engineer in the Power Division, and was involved with initial studies and structural analysis of the 450 MW coal-fired Yampa Generation Station.

Prior to Stearns-Roger, Mr. Springer was employed by Howard, Needles Tammen and Bergendoff, as a Civil Engineer. In this position he was involved with interstate highway design.

DETAILED EXPERIENCE RECORD
SPRINGER, JOSEPH E. - 86414

STONE & WEBSTER ENGINEERING CORPORATION, DENVER, COLORADO
(May 1975 to Present)

Appointments:

Structural Engineer - Mar. 1981
Engineer - Oct. 1979
Sr. Designer - July 1977
Designer - May 1975

Nine Mile Point II, Nuclear Generating Plant (Jan. 1983 to Present)

As STRUCTURAL ENGINEER, Mr. Springer is responsible for coordinating the preparation and checking of pipe support calculations.

Public Service Company of Colorado, Ft. St. Vrain Nuclear Generating Station
(Nov. 1981 - Jan. 1983)

As LEAD STRUCTURAL ENGINEER, responsible for preparing seismic and thermal design for large bore pipe supports for plant piping and responsible for insuring the constructability of these pipe supports.

Northern States Power Company, Prairie Island Nuclear Generating Station
(Apr. 1981 - Nov. 1981)

As STRUCTURAL ENGINEER, responsible for preparing seismic structural design and drawings for greenhouse structure.

Portland General Electric Company (Sept. 1980 - Nov. 1981)

As LEAD STRUCTURAL ENGINEER, responsible for preparing specifications, seismic structural design, foundation design, and drawings for a Technical Support Center. Also responsible for coordinating the efforts of the other disciplines such as electrical, mechanical and architectural.

Omaha Public Power District, Omaha, Nebraska, Ft. Calhoun Nuclear
Generating Station (Nov. 1978 - Mar. 1981)

As STRUCTURAL ENGINEER, prepared specifications, seismic structural design and drawings for the following systems: Post Accident Sampling System; Auxiliary Building Crane Modifications; Radioactive Waste Solidification System; Diesel Generator Enclosure; Switchgear Room Fire Protection; Redundant Cable Tray Separation Fireproofing; Radwaste Container Storage Building; HVAC for the steam generator blowdown area; HVAC for the switchgear room; pipe support analysis for auxiliary building system piping; and radiological plant shielding. Specific design also included using finite elements and dynamic model analysis.

Union Electric Company, St. Louis, Missouri, Osage Hydroelectric Project -
Bagnell Dam (Mar. 1978 - Nov. 1978)

As SENIOR DESIGNER, responsible for preparing the design and drawings for post-tensioning of Bagnell Dam.

Pacific Power & Light Company, Wyodak Generating Station, 330 MW - Coal
(Dec. 1976 - Mar. 1978)

As SENIOR DESIGNER, performed design and checking of drawings for ash pond, and coal conveyor foundation modification. Performed design for pipe support for Unit No. 1 Wyodak Generating Station.

PUD No. 1, Chelan County, Washington, Rock Island Hydroelectric Project,
456 MW (May 1975 - Dec. 1976)

As DESIGNER, performed design and checking of drawings for Rock Island Hydroelectric Project.

STEARNS-ROGER, INC., DENVER, COLORADO (Apr. 1974 - May 1975)

STRUCTURAL ENGINEER IN THE POWER DIVISION

Colorado Ute Electric Association, Yampa Generating Station, Unit No. 2,
450 MW - Coal

Performed structural layout and design of steel framing and concrete foundation of main plant and miscellaneous structures.

HOWARD, NEEDLES, TAMMEN & BERGENDOFF (Jan. 1974 - Apr. 1974)

As CIVIL ENGINEER, performed design and checking of drawings for interstate highway design.

September 1982

CRAIG, WILLIAM C.

SENIOR STRUCTURAL ENGINEER
STRUCTURAL DIVISION

EDUCATION

University of Delaware - Bachelor of Civil Engineering 1957

Boston University - MBA Core Courses 1974-1978

Accounting, Financial Management, Statistics, Operations Management,
Organizational Behavior, Macro-Economics, Marketing

Stone & Webster Continuing Education Program

Nuclear Reactor Engineering 1968

Leadership Skills 1973

Creating a Team Approach 1976

Engineering Assurance Procedures 1973-1976

Storage and Flow of Solids 1982

LICENSES AND REGISTRATIONS

Registered Professional Engineer - Pennsylvania, New Jersey, Maryland, West Virginia, and Wisconsin

EXPERIENCE SUMMARY

Mr. Craig has 26 years of experience with Stone & Webster Engineering Corporation (SWEC) in the consulting engineering industry. He is currently a Project Engineer and Senior Structural Engineer with a diverse background which includes extensive experience in the design and engineering of nuclear and fossil fueled power plants, waste water treatment systems, high voltage transmission lines, industrial projects and conceptual design for high level nuclear waste facilities.

As a Project Engineer, he has been responsible for the administration, coordination and execution of all engineering and design activities on projects and for the cost of engineering services. He is also responsible for monitoring the entire cost of equipment and materials purchased through the headquarters office.

Mr. Craig is currently the Structural Division representative to the Conceptual Engineering Group where he recently supervised the development of site plans, conceptual foundation designs and steel framing drawings for a two unit (700 MW each) lignite fueled power plant for Houston Lighting and Power Company. This current assignment also involved participation in the development of the SWEC Reference Fossil Power Plants for 300, 600 and 750 MW units.

Mr. Craig is also responsible for the Structural Division's program for the enhanced use and development of computer graphics systems. The Division's standard details for architectural, concrete and structural steel have been

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entered into the computer data base. The use of three-dimensional capabilities have been investigated and a variety of software packages are under development for steel design, interface with main frame systems, and productivity enhancement are in progress. The structural work for the above Houston Project was performed on computer graphics.

Mr. Craig, as Project Engineer, recently completed a 600 gpm waste treatment system which was designed for confined site conditions for the Mystic Station of Boston Edison Company. This project involved economic evaluations of secondary treatment systems, definition of waste sources, volumes, pH, and temperature. The project involved the development of large equalization ponds; evaluation of lining materials; monitoring wells, leachate collection system; and design of systems to meet the requirements of the station's NPDES permit and RCRA regulations on hazardous wastes from a fossil plant.

His recent experience as Project Engineer for the Wisconsin Utilities Project, a standard two unit, nuclear fuel, power plant (900 MW each), involved site selection, site development, cooling systems evaluations, nuclear steam supply evaluations and preparation of licensing documents such as the PSAR, ER 316a and 316b Demonstrations. This assignment also involved interface with both local, state, and federal agencies.

PUBLICATIONS

"Design Parameters for EHV Steel Structures," Southeastern Electronic Exchange, Tampa, Florida, October 24, 1963.

DETAILED EXPERIFNCE RECORD
CRAIG, WILLIAM C.

STONE & WEBSTER ENGINEERING CORPORATION, BOSTON, MA (Aug 1956 to Present)

Appointments:

Project Engineer - Feb 1977
Assistant Project Engineer - Nov 1973
Senior Structural Engineer - Apr 1971
Structural Engineer - Dec 1965
Engineer, Structural Division - Aug 1956

Conceptual Engineering/Computer Graphics (May 1980-Sept 1982)

Assigned as the Structural Division representative to the Conceptual Engineering Group where he supervised and participated in the following work:

- a. Site plans, conceptual foundation arrangements, and steel framing layouts for a two unit (700 MW) lignite fueled power plant for Malakoff Electric Generating Station for Houston Lighting and Power Company.
- b. Conceptual foundation arrangements and steel framing layouts for a 650 MW coal fueled power plant, Unit No. 1, Patriot Generating Station for Indianapolis Power and Light Company.
- c. Conceptual development of the Reference Fossil Power Plant for 300, 600, and 750 MW units.
- d. Conceptual development of a reference modular concept for on-site radwaste storage facility for operating nuclear power plants.

Computer Graphics Development

As DIVISION REPRESENTATIVE, responsible for the program for the enhanced use and software development of computer graphics systems. Responsible for organizing the computer data base for the Division's standard detail for architectural, concrete and structural steel. The use of three-dimensional capabilities have been investigated and a variety of software packages are under development for steel design, interface with main frame systems, and productivity enhancement are in progress. The structural work for the above Houston Project was performed on computer graphics.

Wastewater Treatment System - Mystic Station, Boston Edison Company
(May 1980-Mar 1982)

As PROJECT ENGINEER, responsible for the administration, coordination, and execution of all engineering and design activities associated with a wastewater treatment system designed to meet current discharge standards. The system is designed to handle waste flows of 800,000 gal per day. Site

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soil conditions require unique solution to the design of all system components.

Structural Division, Marketing, and Studies (Aug 1979-Apr-1980)

Assignments during this period included preparation of structural division guidelines, standards, and procedures, industrial marketing efforts on projects for IBM, duPont, and NEN, a material of construction study for Pepsi-Cola, and problem report investigations.

In February of 1979, Mr. Craig visited the nuclear facilities at Marcoule, France and Karlsruhe, Germany to study the extent of European technology in the vitrification of high level nuclear wastes and the design concepts for interim air cooled dry storage of packaged wastes.

Wisconsin Utilities Project, Wisconsin Electric Power Company
(Feb 1977-July 1979)

As PROJECT ENGINEER, responsible for the administration, coordination, and execution of all engineering and design activities associated with licensing of an 1,800 MW (two 900 MW) PWR nuclear power plant. A unique part of this project was an extensive site investigation (over 100 sites) in Wisconsin and Upper Michigan, development of a standard PSAR, three site addendums, and three different site environmental reports.

Wisconsin Utilities Project, Wisconsin Electric Power Company
(Nov 1973-Jan 1977)

As ASSISTANT PROJECT ENGINEER, responsible for a standard two-unit nuclear feed plant (1,800 MW) that can be constructed on at least three sites in Wisconsin. Coordinated the engineering efforts of the environmental, structural, construction, geotechnical, control, electrical, and all groups performing seismic analysis of equipment and structures. Also, performed duties related to estimating efforts, manpower projections, and general scheduling.

Wisconsin Utilities Project, Wisconsin Electric Power Company
(July 1972-Oct 1973)

As LEAD STRUCTURAL ENGINEER, responsible for a two-unit nuclear fuel plant (1,000 MW). Participated in site selection, mapping, design instructions, PSAR, environmental reports, NSSS evaluation schedules, and estimates. Also, participated in plant arrangement and related studies.

Precipitator Upgrading - Units 1 and 2, Virginia Electric and Power Company
(June 1971-June 1972)

As LEAD STRUCTURAL ENGINEER, responsible for structural engineering for additional precipitators for two 560 MW fossil fuel plants. Work included preparation of contract specifications for precipitators and structures, foundation design and relocation of facilities, and roadways for these structures. Also, participated in project control of work and schedule of subcontractors.

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1973 Extension - Mt. Storm Power Station, Virginia Electric and Power Company (Apr 1969-June 1972)

As LEAD STRUCTURAL ENGINEER, responsible for structural engineering for a 650 MW fossil fuel plant including coal handling and corrective work to existing unit facilities. Prepared design instruction, schedules, estimates, specifications, comparison of bids, design supervision. Also participated in basic plant layout decisions.

Work also includes alterations to a 500 kV substation and the transformer leads over the powerhouse roof.

500 and 230 kV Addition to Conastone Substation, Baltimore Gas and Electric Company (Jan 1968-Mar 1969)

As LEAD STRUCTURAL ENGINEER, responsible for structural engineering for the addition to a 500/230 kV substation using aluminum structures. Prepared new structure design, made studies to select economic foundation type, modified existing structures, and prepared bidding documents and construction specifications.

Transmission Line Estimate, Savannah Electric and Power Company

As PROJECT ENGINEER for the preliminary design and preparation of an estimate for a double circuit, 115 kV, 10 mile transmission line. Work included an investigation of site, preliminary layout, establishing basis of estimate, and presentation to Client.

Tredegar, Duhaney, and Old Harbour Substations, Jamaica Public Service Company

As LEAD STRUCTURAL ENGINEER, responsible for structural engineering for three substations; two were 69/138 kV designs and the other 138 kV design. Prepared specification for World Bank bidding, made comparison; checked designs by Seller, and supervised foundation design.

230 kV Transmission Line, Big Bend Substation, Tampa Electric Company

As LEAD STRUCTURAL ENGINEER, responsible for structural engineering for foundation design for a 230 kV substation and two double circuit 230 kV transmission lines. Prepared foundation design study and estimate, analyzed borings, investigated construction techniques, supervised design and bidding documents and construction specifications. Final design was based on using mud slurry techniques for excavation in wet sandy soils.

500 kV Transmission Line and Substations, Keystone Projects (Sept 1963-Dec 1967)

As LEAD STRUCTURAL ENGINEER, responsible for structural engineering for a 600 mile, single circuit, 500 kV steel tower line from western Pennsylvania to Philadelphia, Baltimore, New Jersey, and New York. Prepared studies for tower outline, designs, materials, selection of foundations, insulator arrangements. Supervised tower testing of four tower types. Made initial

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and final cost estimates of line and prepared the structural material and construction specifications.

Also responsible for structural engineering of six 500/230 kV substations using aluminum structures and concrete foundations.

500 kV Transmission Line, Virginia Electric and Power Company (Feb 1962-Aug 1963)

As LEAD STRUCTURAL ENGINEER, responsible for structural engineering for 350 mile, single circuit, 500 kV steel tower line from Mt. Storm Power Station in West Virginia to Loudoun substation west of Washington, D.C., south to Elmont substation west of Richmond, Virginia, then west to Doods substation and north to Mt. Storm. Supervised studies to select tower types and outlines with steel guyed V-towers used in mountains and self-supporting in cultivated areas. Prepared project estimate, material specifications, and supervised foundation designs. Made studies for use of computer in tower spotting.

Also responsible for structural engineering of power station transformer leads and four 500 kV substations using strain bus and steel structures.

345 kV Transmission Line, The Cleveland Electric Illuminating Company (Mar 1961-Jan 1962)

As STRUCTURAL ENGINEER, responsible for structural engineering for a 55 mile, single circuit, 345 kV line from Cleveland to Canton, Ohio. Made studies, estimates, comparisons of tower layouts, selections of foundations, and all specifications.

White River Substation, Puget Sound Power & Light Company

As STRUCTURAL ENGINEER, responsible for structural engineering for a 230/115 kV substation, including structures, control house, oil pump house, and microwave tower.

Thelma Switching Station, Virginia Electric and Power Company

As STRUCTURAL ENGINEER, responsible for structural engineering of a 230 kV switching station for the Gaston Hydroelectric Project.

138 kV Transmission Line, Union Electric Company (Sept 1959-Feb 1961)

As STRUCTURAL ENGINEER, responsible for structural engineering of a 10 mile, 138 kV double circuit line with a 3,500 ft Mississippi River Crossing. Made cost studies to determine economic design and construction, selected tower outlines and foundation types.

Transmission Line, Savannah Electric and Power Company

As STRUCTURAL ENGINEER, responsible for structural engineering of a 10 mile, 110 kV line with portions underbuilt for one or two circuits of 44 kV. Made all economic studies, site inspection, selection of conductor tensions, and foundations.

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Moutaup Electric Company

As STRUCTURAL ENGINEER, responsible for tower relocation to clear new transmission line.

Tower relocation for state highway.

Reconductoring of existing transmission line.

Repairs to existing river crossing towers. 110 kV double circuit transmission line with 2,500 ft crossing the Taunton River. This line consisted of eight steel towers through residential area with wood poles for the rest of the line.

Advanced Pressurized Water Reactor Study, United States Atomic Energy Commission (May 1959-Aug 1959)

As STRUCTURAL ENGINEER, prepared estimate and design for low pressure vented vapor container, cylindrical shape, of reinforced concrete.

Newman Power Station - Unit No. 1, El Paso Electric Company, El Paso, TX

Study to determine method of test loading turbine support foundations.

Power Plant Addition, - No. 5 Boiler, National Fetro-Chemicals Corporation

As an ENGINEER, responsible for structural engineering of steam boiler.

Willow Glen Power Station, Gulf States Utilities Company (Oct 1958-Apr 1959)

As a FIELD ENGINEER, responsible for work on circulating water system, switchyard, towers, roadwork, preparation of shop details, cost studies, and specifications.

Potomac Electric and Power Company (July 1958-Sept 1958)

As an ENGINEER, investigated and designed passenger tramway from power station to screenwell.

Assignments in Estimating, Cost, Purchasing, and Appraisal Departments.

Power Plant Extension, Moutaup Electric Company (Mar 1958-June 1958)

As an ENGINEER, responsible for structural engineering of ash and coal handling facilities.

Chesterfield Station - Unit No. 4, Virginia Electric and Power Company (Dec 1957-Feb 1958)

As a STRUCTURAL DESIGNER, responsible for the design of structural steel for boiler suspension, turbine roof trusses, crane girders, columns, and wind bracing system.

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Tampa Plant, Jos. Schlitz Brewing Company (Mar 1957-Nov 1957)

As a STRUCTURAL DESIGNER, prepared design of pile and soil bearing foundations, walls, floor slabs, pipe tunnels, and steel frame building for brew house, cellar building, grain storage bins, warehouse, and office building.

Insulation and Hardboard Mill, Abitibi Corporation, Alpena, MI
(Aug 1956-Feb 1957)

As an ENGINEER, prepared specifications and comparison of bids for all structural materials.

Roy S. Nelson Station, Gulf States Utilities Company

Rio Grande Power Station, El Paso Electric Company

As an ENGINEER, prepared specifications, layout of steel for boiler suspension, surface drainage, checking pile foundations for as-built conditions.

HOG ISLAND LUMBER COMPANY, PHILADELPHIA, PA (Summers 1953-1956)

Draftsman for design of prefabricated homes.

WILLIAM E. LOUIS, CONTRACTOR, SWARTHMORE, PA

Carpenter

ATSUGI NAVAL AIR STATION, JAPAN, U.S. NAVY - MOBILE CONSTRUCTION BATTALION
NO. 2. (1950-1952)

Prepared plans, specifications and inspected construction for transportation building, photography laboratory, training building, and communications facilities.

HUMMER E. GREEN LUMBER COMPANY, CHESTER, PA (1948-1950)

Architectural Draftsman

WARNER-WEST CORPORATION, PHILADELPHIA, PA (1946-1948)

Apprentice Carpenter

MICHAEL J. ABRAHAM
Manager, Structures Department
Senior Professional Associate
Structural Engineer

Education

Bowdoin College, B.A. 1960
Columbia University School of Engineering, B.S., 1963, M.S., 1964

Societies

American Concrete Institute
American Society of Civil Engineers
Structural Stability Research Council, Chairman Task Group 3, Beam Columns

Licenses

New York, Georgia, Washington

Recently appointed manager of the North Atlantic Region's Structures Department, Mr. Abraham has participated in many bridge, tunnel, and building projects:

Recent Projects

- Project engineer directing preparation of design and specifications for a new powerhouse for the Groveville Mills hydroelectric plant, Beacon, New York. This 0.8-MW facility will also include a revised penstock and revision to the tailrace.
- Deputy project manager for Hood Canal Bridge, Washington – a 6,470-foot-long floating, prestressed concrete bridge with a 600-foot-long lift draw section to allow ship passage. Responsible for design of bridge superstructure as well as movable bridge operating machinery, electrical and mechanical designs, specifications, and technical supervision of three subconsultants.
- Project manager for recent investigation of collapse of Kemper Arena, Kansas City, Missouri. A large portion of the roof of this 17,600-seat arena collapsed during a violent storm. As project manager, directed firm's investigation of collapse including structural and hydrological analysis, wind tunnel testing, consultation with consultant, and report preparation. Also project manager for subsequent review of rebuilt arena; review resulted in letter report to client.
- Project engineer for two highway bridges in upstate New York – part of infrastructure improvements associated with the Prattville Pumped Storage Project of the Power Authority of the State of New York.
- Design of several fixed and movable highway bridges: the Third Street (bascule) Bridge in Wilmington, Delaware; the James River (vertical lift) Bridge in Newport News, Virginia; and the Martin Luther King, Jr., Memorial Bridge, in Richmond, Virginia.
- Review of shop drawings and erection procedures for the Curtis Creek Bridge, Baltimore, Maryland.
- Inspection, preparation of reports, rating, and design of repairs for fixed and movable bridges. Projects include a 544-foot-long vertical lift railroad bridge, Buzzards Bay, Massachusetts; a 60-foot-long swing bridge, Milford, Delaware; and a 3,235-foot causeway with a 160-foot bascule span, Galveston, Texas.
- Design and consultation during construction work on a 3,000-car precast prestressed concrete parking garage project in White Plains, New York. The garage includes three buildings and a high-level bridge.
- Project engineer in charge of plans and specifications for the plaza roof of the main subway station in Atlanta, Georgia. The roof is a large precast, post-tensioned, concrete structure erected using segmental construction techniques.
- Design engineer for prestressed box beams on Congress Avenue Bridge, Austin, Texas.
- Project engineer in charge of design and detailing of tunnel portions of the Second Downtown Elizabeth River Tunnel between Norfolk and Portsmouth, Virginia.
- Supervision of design and preparation of drawings for the ventilation buildings and certain portions of the sunken tubes of the Second Hampton Roads Bridge/Tunnel crossing in Virginia.
- Design engineer, preliminary design of mushroom piers, Keehi Interchange, Oahu, Hawaii.

- Structural analysis of a waterfront station, Section F 2, of the Washington Metropolitan Area Transit Authority (WMATA) Subway System.
- Acted as consultant to a major insurance company regarding an investigation into the collapse of the Hartford, Connecticut, Coliseum roof.
- Member of a five-man team of bridge experts who toured six European countries to assess state-of-the-art of prestressed segmental concrete bridges. Project was sponsored by International Road Federation at request of Federal Highway Administration.
- Model studies conducted at the U.S. Corps of Engineers Experimental Station at Vicksburg, Mississippi, on the placing operations for the 63rd Street Tunnel in the East River, New York City.
- Review of erection procedures of the Fremont Bridge in Portland, Oregon. The erection included lifting the 6,000-ton center span 160 feet into place – the world's largest lift of this type.
- Participation in feasibility studies for various sunken-tube tunnels, high-level bridge crossings, and tracked air-cushion vehicle guideways.

Previous Experience

- Served with the U.S. Peace Corps in the Philippines as a Civil Engineer attached to a Philippine Government Agency. Directed the survey, design, and construction of self-help projects such as schools, water supply, and irrigation systems
- Structural engineer with a major design-construction firm. Involved in the design of iron-ore processing plants and mines. Work included the design and detailing of ore storage buildings, reclaim tunnels, and a stressed skin conveyor support system.

Publications

- Coauthor, "Record Span for Record Lift – The Fremont Bridge," awarded first prize by James F. Lincoln Arc Welding Foundation, 1974.
- Coauthor, "A Report on the Design and Construction of Segmental Concrete Bridges in Western Europe—1977," U.S. Department of Transportation, Washington, D.C., 1978.

Awards

- Honor Award, New York Association of Consulting Engineers, 1982. Structural Design of Five Points Station Roof.
- Annual Award, Prestressed Concrete Institute, 1982, Five Points Station Roof



STONE & WEBSTER MICHIGAN, INC.

P.O. Box 2325, BOSTON, MASSACHUSETTS 02107

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

June 16, 1983
N.O. No. 14509
NRC File #83-06-16

RE: DOCKET NO. 50-329/330
MIDLAND PLANT - UNITS 1 AND 2
OVERVIEW OF THE CONSTRUCTION COMPLETION PROGRAM

Copies of Stone & Webster documents developed to implement the Construction Implementation Overview of the (CPCo) Construction Completion Program are attached for your review and comments.

1. Project Quality Assurance Plan June 18, 1983
2. Quality Control Instruction, QCI 15.01 Nonconformance Identification and Reporting Rev. 0, June 14, 1983

If you have any questions with respect to the attachments, please contact me at (517) 631-8650, extension 486.

Very truly yours,

pp S.W. Baranow

S.W. Baranow
Program Manager

Enclosure

SWB/ka

cc: JHarrison, NRC Glen Ellyn, IL w/att
RCook, NRC Midland (Site Manager)w/att
DBMiller, US NRC (Site Representative)w/att
RBKelly, S&W 245/5 w/att
APamaruso, S&W 245/13 w/att

JUN 22 1983

8306270309

J.O. No. 14509
Midland Plant Units 1 & 2
Consumer Power Company
Third Party Construction
Implementation Overview

PROJECT QUALITY ASSURANCE PLAN

Approvals:

Dates:

Sw Benson
Program Manager

6-13-83

Crutcher for
Chief Engineer
Engineering Assurance

6-8-83

R. B. Kelly P.E.
Manager
Quality Assurance

6-7-83

SCOPE

This procedure describes the quality assurance plan for activities performed by Stone & Webster Engineering Corporation (SWEC) for the Consumers Power Company's (CPCo) Midland Plant- Units One and Two. The work involved in this third party overview is described in applicable CPCo specifications and procedures and shall be accomplished in the following manner:

- a. Development of an overview program and preparation of a Project Quality Plan.
- b. Review of the design and construction documents to gain familiarity with the work.
- c. Evaluation of the adequacy of technical and related administrative construction and quality procedures.
- d. Evaluation of the degree of compliance with technical and administrative construction and quality procedures.
- e. Daily reviews as necessary with the Owner to obtain any clarifying information and project documents that are needed to carry out this program. The Owner and SWEC will establish a specific communication plan at the start of the work.
- f. Submittal of brief weekly progress reports and a final report to the NRC with a copy to CPCo.
- g. Submittal of monthly reports of findings and observations to the NRC with a copy to CPCo.

- h. Monthly reports and the final report shall be reviewed by a senior level overview committee in accordance with the Project Program Plan.
- i. SWEC will not be responsible for implementing corrective action, however, their professional opinion may be requested.

PROGRAM REQUIREMENTS AND ACTIVITIES

I. ORGANIZATION

The overall SWEC organization is depicted in SWSQAP 1-74A (Section I). A Program Manager will function as the site leader for the third party overview. Project organization is described in the Project Program Plan.

II. QUALITY ASSURANCE PROGRAM

The overall SWEC quality assurance program is designed to provide assurance that all SWEC activities are accomplished in a controlled manner. The SWEC corporate QA program complies with 10CFR50, Appendix B, and NRC Regulatory Guides, and is described in an NRC approved topical report, SWSQAP 1-74A, "Standard Nuclear Quality Assurance Program."

This quality assurance plan shall be maintained up-to-date to reflect any changes in the scope of SWEC work.

This quality assurance plan identifies the procedures which implement the overall QA program as it applies to the SWEC scope. Insofar as possible, applicable standard SWEC procedures will be used to govern the work. When standard procedures do not fit project circumstances, project procedures will be issued to govern the work. Variances from standard SWEC procedures will be approved according to Quality Standard (QS) 5.1 and Engineering Assurance Procedure (EAP) 5.7.

Personnel performing activities in accordance with this plan requiring qualification and certification will be qualified and certified in accordance with Quality Standard 2.12 and Quality Assurance Directive 2.5.

III. DESIGN CONTROL

(Not within the SWEC scope)

IV. PROCUREMENT DOCUMENT CONTROL

Consulting Services, as required, are procured in accordance with Engineering Assurance Procedures 4.1 and 4.15, which are supplemented by Project Procedure (PP) (LATER).

V. INSTRUCTIONS, PROCEDURES, AND DRAWINGS

SWEC procedures, including variances, are prepared and controlled in accordance with Section II of this QA plan.

(Instructions, drawings and specifications are not within the SWEC scope).

- VI. DOCUMENT CONTROL
(Not within the SWEC scope)
- VII. CONTROL OF PURCHASED MATERIAL, PARTS, EQUIPMENT, AND SERVICES
(Control of Purchased Material, Parts and Equipment - not within the SWEC scope).
Control of Services is in accordance with Engineering Assurance Procedure 7.1.
- VIII. IDENTIFICATION AND CONTROL OF MATERIAL, PARTS, AND COMPONENTS
(Not within the SWEC scope)
- IX. CONTROL OF SPECIAL PROCESS
(Not within the SWEC scope)
- X. INSPECTION
Quality Assurance monitoring of the construction and quality activities is performed by surveillance of on-going work.
- XI. TEST CONTROL
(Not within the SWEC scope)
- XII. CONTROL OF MEASURING AND TEST EQUIPMENT
(Not within the SWEC scope)
- XIII. HANDLING, STORAGE, AND SHIPPING
(Not within the SWEC scope)
- XIV. INSPECTION, TEST, AND OPERATING STATUS
(Not within the SWEC scope)
- XV. NONCONFORMING MATERIAL, PARTS, OR COMPONENTS
Nonconformances discovered by SWEC during the monitoring process are reported in writing to the NRC with copy to CPCo.
- XVI. CORRECTIVE ACTION
Reporting under 10CFR50.55(e) is accomplished in accordance with QS-16.2 and EAP-16.2.
Reporting under 10CFR21 is accomplished in accordance with QS-16.3 and EAP-16.3.

STONE & WEBSTER QUALITY CONTROL INSTRUCTION	QCI NO 15.01	REV. 0	DATE 6/14/83	PREPARED BY F. Bearham
	DIVISION FOC		LOCATION MNPP	
	APPLICABILITY N/A		APPROVED BY <i>F. Bearham</i> 6/14/83	
	RE: PROCEDURE N/A			
	SUBJECT NONCONFORMANCE IDENTIFICATION AND REPORTING			

1.0 PURPOSE

1.1 To describe the system for initiating, processing, distributing and controlling Nonconformance Identification Reports (NIR), documenting field nonconformances.

2.0 SCOPE

This instruction applies to nonconformances identified by Construction Implementation Overview (CIO) personnel during evaluation and verification of activities associated with the implementation of Phase I and Phase II of the Construction Completion Program (CCP).

3.0 REFERENCES

- 3.1 SWEC Third Party Construction Implementation Overview May 19, 1983
- 3.2 SWEC Project Quality Assurance Plan
- 3.3 Processing of CIO Deficiencies, N-6 Rev. 0, May 16, 1983

4.0 ATTACHMENTS

- 4.1 Nonconformance Identification Report (NIR)
- 4.2 Instructions for completion of the NIR report
- 4.3 NIR Log Summary

5.0 DEFINITIONS

5.1 Nonconformance - A deficiency in characteristic, documentation or procedure which renders the quality of an item unacceptable or indeterminate. Examples of nonconformance include: Physical defects, test failures, incorrect or inadequate documentation, or deviation from prescribed processings, inspection or test procedure.

6.0 PROCEDURE

6.1 Nonconformances that are observed by (CIO) personnel and determined to have been previously identified by Consumers Power Company (CPCo.) or their Constructors shall not be reported.

Note - Previously reported nonconformances will normally be identified by number on the Quality Control Inspection Records (QCIR) which are attachments to Project Quality Control Instructions (PQCI).

6.2 Nonconformances which have not been previously identified by CPCo or their Constructors shall be reported on a Nonconformance Identification Report (NIR).

- 6.3 NIRs shall be evaluated for potential reportability under 10CFR 50.55e and/or 10CFR Part 21 by the Program Manager. The Program Manager shall transm. to CPCo a copy of the NIR and a brief explanation outlining the reason(s) why it should be evaluated by CPCo.
- 6.4 Upon concurrence by the Program Manager, the original shall be transmitted to CPCo for processing in accordance with MPQAD procedure N-6, "Processing of Construction Implementation Overview Deficiencies." A copy of the NIR shall be transmitted to NRC site representative for information. Copies of NIRs shall remain in the CIO files for tracking purposes.
- 6.5 The Program Manager shall maintain communication with CPCo to determine when resolutions of nonconformances are accomplished.
- 6.6 Upon notification from CPCo that the nonconformance has been resolved, (CIO) personnel shall verify that corrective actions have been accomplished. After verification, the NIR shall be closed with a brief description of the corrective action accomplished and shall signify concurrence by signing and dating the NIR.
- 6.7 If the corrective action is considered to be unsatisfactory, the initiator shall issue a new NIR which shall be processed in accordance with paragraph 6.4.
- 6.8 A weekly report showing the status of NIRs shall be sent to the US NRC with a copy to CPCo.

7.0 RECORDS

- 7.1 Closed NIRs shall be distributed as follows:
 - Original of NIR and MPQAD NCR to CPCo permanent plant files
 - One copy to US NRC
 - One copy to CIO files
- 7.2 Other records shall be distributed as follows:
 - Originals of completed summary logs to CPCo permanent plant files

STONE AND WEBSTER ENGINEERING CORPORATION
 NONCONFORMANCE IDENTIFICATION REPORT

QCI 15.01
 Attachment 1

DATE OF NONCONFORMANCE: _____ NIR NUMBER _____

IDENTIFICATION/LOCATION OF ITEMS:

DESCRIPTION OF NONCONFORMANCE:

INITIATOR _____ DATE _____	<u>CONCURRENCE</u> PROGRAM MGR _____ DATE _____	<u>REPORTABILITY</u> 10CFR 50.55e Yes <input type="checkbox"/> NO <input type="checkbox"/> 10CFR PART 21 YES <input type="checkbox"/> NO <input type="checkbox"/>
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CORRECTIVE ACTION BY:

 IDENTIFY ORGANIZATION TAKING CORRECTIVE ACTION

<u>CONCURRENCE SAT UNSAT</u> INITIATOR _____ DATE _____	<u>NEW NIR#</u> DATE _____	<u>CONCURRENCE</u> PROGRAM MGR _____ DATE _____
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REMARKS

Instructions for Completion of a Nonconformance Identification Report

Number - Enter next sequential number obtained from file.

Date - Enter date observation was made.

Identification/Location of Item - Use name and serial, mark or heat number, etc., or other description of items affected by the nonconformances.

Description of Nonconformance - Reference documents and requirements and explain manner in which they are violated. Include any pertinent physical condition (dimensions, test reports, damages, etc).

Initiator - Signature of Construction Implementation Overview Team member making observation.

Date - Enter date of report.

Program Management Concurrence - Signature of the Program Manager or his designee signifying concurrence with issue of the NIR.

Corrective Action - Describe action taken by CPCo. or their Contractors to correct nonconformance. Include any appropriate report numbers, specification changes and/or methods of repair, etc.

Initiator Concurrence - Signature of Construction Implementation Overview Team member reporting and concurring with corrective action.

Program Management Concurrence - Signature of the Program Manager or his designee signifying concurrence with closure of the NIR.

Date - Enter date NIR is closed.

XVII. QUALITY ASSURANCE RECORDS

SWEC General Policy and Procedure for records collection, retention, and turnover to Consumers Power Company are described in QS-17.1 and EAP-17.2 and as detailed in the scope under items f. and g. EAP 17.2 is supplemented by PP (LATER).

XVIII. AUDITS

(Not within SWEC scope)

STONE & WEBSTER MICHIGAN, INC.
NIR LOG SUMMARY

NIR NO.	MPQAD NCR NO.	SUBJECT	DATE OF ISSUE	DATE DISP.	DATE CLOSED	COMMENTS/STATUS REP. NO.