50-329/330 OM, OL

Exhibits from

10/22/80 Deposition

of

Thomas C Cooke,

Midland Project Superintendent,
Consumers Power Company

Exhibits 1-3

ARC Ex #1 id. 10/22/80 (Cooke)

Resume

Thomas C. Cooke

Education and Training

1953 - Graduation, LaGrange H. S., LaGrange, Ohio
1957 - Graduation, Ohio University, Athens, Ohio, BSCE
1957 - Engineer Officer Basic Course, Ft. Belvoir, VA
1961 - Hobart Welding Inspection Course, Troy, Ohio
1963 - CPM Seminar
1966 - Fallout Shelter Analysis, Grand Rapids, MI
1968 - Nuclear Steam Supply Design Lecture Series, Windsor, CT
1968 - Public Utilities Report, Home Study
1970's - Various Utility Sponsored Management Courses, MI

Experience

Upon graduation from Ohio University, I served as Second Lieutenant and eventually as First Lieutenant in the U.S. Army Corps of Engineers in the capacity of Platoon Commander and Assistant Operations Officer in a construction battalion. Typical projects included roads, bridges, rifle ranges, cottages, rock crushers, transmission lines, etc.

My career with a major utility has provided me with the opportunity to become involved in many varied construction projects with progressively more responsible assignments. I have worked as part of the owner's team responsible for significant portions of several large projects and have often had sole responsibility on smaller projects involving reciprocating and jet compressors, steam heating plants demolition and rebuilding, underground steam mains, associated electrical, mechanical and instrumentation for the above and modifications projects. At my last assignment, I was responsible for management of the entire checkout and preoperation test program at a 790 MW nuclear facility to the point of fuel load. After fuel load, I was assigned to modifications work at that facility as Project Superintendent. Presently, I am Project Superintendent responsible for construction of a twin nuclear co-generation facility.

Typically the above assignments have included working with contractors, subcontractors and various architect engineer organizations. I have been very involved in inspection, testing, coordination, procurement, technical problems, invoice approval, permits, safety, security, fire protection, public relations, labor relations, expediting, scheduling, permits and startup. Much of the work has been accomplished utilizing cost plus, unit price, lump sum and incentive contracts. During the past few years, I have also gained considerable experience in dealing with financial slowdowns, changing government regulations, regulatory enforcement, legal proceedings, hearings and changes in design.

<u>Chronology</u>

Jun 57 - Aug 57 -	Graduate Student in Training Program	Utility
Aug 57 - Aug 59 -	U.S. Army Corps of Engineers	Ft. Belvoir, VA Ft. Hood, TX
Sep 59 - Feb 60 -	Graduate Student in Training Program	Utility
Feb 60 - Oct 60 -	Field Construction Assistant - Gas	24" and 26" Cross Country Pipeline
Oct 60 - Mar 61 -	Field Construction Assistant - Electric	265 MW Fossil Civil Work
Mar 61 - Jun 62 -	Field Construction Assistant - Electric	265 MW Fossil Piping
Jun 62 - Jun 63 -	Field Construction Supervisor - Electric	265 MW Fossil Piping & Startup
Jun 63 - Jun 64 -	Field Construction Supervisor - Electric	Gas Compressor Station
Jun 64 - Jun 65 -	Field Construction Supervisor - Electric	Steam Heating Plant
Jun 65 - Oct 65 -	Field Construction Supervisor - Electric	380 MW Fossil UP Boiler
Oct 65 - Mar 67 -	General Engineer	Instrumentation & Piping
Mar 67 - Jul 67 -	Assistant Field Construction Superintendent	& Startup
Jul 67 - Aug 68 -	Assistant Field Construction Superintendent	790 MW Nuclear
Aug 68 - Mar 71 -	General Supervisor	790 MW Nuclear Startup
Mar 71 - Dec 72 -	Project Superintendent	790 MW Nuclear Modifications
Jan 73 - Present -	Project Superintendent	Twin 800 MW Nuclear Cogeneration

Miscellaneous

High School Valedictorian

College Graduate Cum Laude

Organizations:

Phi Eta Sigma	Freshman Honorary
Tau Beta Pi	Engineer Honorary
American Nuclear Society	

Registration:

Michigan Progessional Engineer
Ohio Professional Engineer

Publications:

Article for "Military Engineer"
Co-authored paper for 1976 ANS convention

NRC Ex # 8.d
10/22/80 (Cooke)

TCC

Consumers Power Company

Midland Project: P.O. Box 1963, Midland, Michigan 48640 - Area Code 517 631-0951

September 8, 1977

Mr. J. F. Newgen
Bechtel Power Corporation
P.O. Box 2167
Midland, MI 48640

MIDLAND PROJECT GWO-7020--ADMINISTRATION BUILDING/GRADE BEAM FAILURE
File: 0130 Serial: 2538

On August 25 we became aware of the situation regarding settlement of the subject beam. Inasmuch as this particular item could fall under the provisions of Article 9 of the Bechtel Power/Consumers Power Company contract regarding repair of defective work at contractor's expense, we are requesting that you advise us as to the reasons for this failure and set up a separate account for costs incurred for removal and repair of same (engineering and construction).

I would anticipate that your response to this office would include some discussion as to why the incident should or should not come under the provisions of Article 9 of the contract.

T. C. Cooke
Project Superintendent

TCC/pp

RECEIVED
SEP 26 1977
MIDLAND PLANT PROJECT
MIDLAND, MICHIGAN

Bechtel Power Corporation

Post Office Box 2167
Midland, Michigan 48640

September 23, 1977

CHRON. FILE

Consumers Power Company
P. O. Box 1963
Midland, MI 48640

Attention: T. C. Cooke

Job 7220 Midland Project
Administration Building
Grade Beam Failure
BCCC 2794

Dear Mr. Cooke:

Reference: T. C. Cooke's letter to J. F. Newgen, Serial No. 2538 dated September 8, 1977

We are in receipt of the reference correspondence and wish to advise that we are still investigating the failure to determine the reason.

A separate account for the cost of remedial work has been established. This does not, however, include distributables and design engineering support which would require modification to our present costing system.

We will keep you advised of all developments regarding this matter and provide you with a response to your letter once the investigation is complete and a determination made.

Very truly yours,

J. F. Newgen

JFN/JDO/af

MIDLAND PLANT PROJECT
MIDLAND. MICHIGAN

Post Office Box 2167
Midland, Michigan 48640

December 30, 1977

Consumers Power Company
P. O. Box 1963
Midland, MI 48640

Attention: Mr. T. C. Cooke

Job 7220 Midland Project
Settlement of Administration
Building Grade Beam at
0.4 Line
BCCC-3010

Dear Mr. Cooke:

Reference: T. C. Cooke letter to J. F. Newgen - CCBC-1155 - dated September 8, 1977 (Serial 2538)

This letter is written in response to the reference letter and provides an update on our investigation of the subject incident. Investigation of the area during the removal of the fill and testing performed on this material indicates that the major contributing factor to the failure was compaction at a value lower than that required by the specification. Since United States Testing Company was directly involved with the testing of the material during installation, we are investigating their liability. We will keep you apprised of subsequent actions in this matter. Per your request, the costs associated with the removal and repair of the grade beam have been maintained in a separate account.

Very truly yours,

J. F. Newgen

JFN/AJB/jae

NRC Ex. #3.1
10/22/80 (Cooke)

Midland PSAR

1.4 PRINCIPAL ARCHITECTURAL AND ENGINEERING CRITERIA FOR DESIGN

The principal architectural and engineering criteria for design for the plant are summarized below. (See also Appendix 1C.) The specific architectural and engineering criteria and design features are detailed in later sections.

1.4.1 PLANT DESIGN

Principal structures and equipment which may serve either to prevent accidents or to mitigate their consequences are designed, fabricated, and erected in accordance with applicable codes and to withstand the most severe earthquakes, flooding conditions, windstorms, snow loads, temperature and other deleterious natural phenomena which could be expected to occur at the site during the lifetime of these units. Principal structures and equipment are sized for the maximum expected NSS and turbine generator outputs. Each NSS will be housed in a separate reactor building and will function independently such that failure of one unit will not result in unsafe condition of the other.

1.4.2 REACTOR

The reactors are of the pressurized water type, fueled with slightly enriched uranium dioxide. The reactors and associated auxiliary systems are essentially identical.

Neutron absorption for reactivity control is provided by control rods and by dissolved boric acid in the coolant. The boron chemical shim system is functionally independent of the control rod system.

For all operating conditions, the control rods are capable of providing an adequate shutdown margin at hot, zero power conditions following a trip, even with the most reactive rod stuck in the fully withdrawn position.

The boron chemical shim system is capable of adding boric acid to the reactor coolant at a rate sufficient to maintain an adequate shutdown margin during reactor system cooldown at the maximum design rate following a reactor trip.

The combined response of the Doppler (fuel temperature coefficient), the moderator temperature coefficient, the moderator void coefficient and the moderator pressure coefficient to an increase in reactor thermal power is a decrease in reactivity. In addition, the reactor power transient remains bounded and damped in response to any finite changes in any operating variable.

Automatic and redundant reactor trips are provided to prevent anticipated plant transients from producing fuel or clad damage.

1.4.3 REACTOR COOLANT AND AUXILIARY SYSTEMS

Heat removal systems are provided which can safely accommodate core heat output under all credible circumstances. Each of these heat removal systems has sufficient redundancy to provide reliable operation under all credible circumstances.

1.4.4 REACTOR BUILDING

The reactor buildings, including the associated access openings and penetrations, are designed to contain the maximum pressures resulting from postulated loss-of-coolant accidents (LOCA) in which (a) the total energy contained in the reactor coolant system water is assumed to be released into the reactor building through a double-ended break of any one of the primary coolant pipes, (b) there is a simultaneous loss of external electric power, (c) heat is transferred from the reactor to the reactor building atmosphere by water supplied from the emergency core cooling system (ECCS), (d) either the reactor building air recirculation and cooling units function or the reactor building spray system functions, and (e) the engineered safeguards including safety injection do not operate until 25 to 40 seconds following the accident.

Selected penetrations are provided with either a seal water injection system or are continuously pressurized with air at a pressure greater than building design pressure.

Means are provided for pressure and leak rate testing of the reactor building system including provisions for leak rate testing of piping and electrical penetrations that rely on gasketed seals or sealing compounds.

1.4.5 ENGINEERED SAFEGUARDS

Engineered safeguards systems with redundant features are incorporated in the plant design which, in conjunction with the reactor building system, provide a high degree of assurance that the release of fission products to the environment following any credible loss-of-coolant accident will not exceed the reference doses set forth in 10 CFR, Part 100.

1.4.6 INSTRUMENTATION AND CONTROL

Interlocks and automatic protective systems are provided along with administrative controls to insure safe operation of the plant. A reactor protective system is provided to initiate reactor trip if the reactor approaches an operating limit. An engineered safeguards actuation system is provided to initiate these systems upon detection of LOCA.

Sufficient redundancy is installed to permit periodic testing of the reactor protective systems and so that failure or removal from service of any one protective system component or portion of the system will not preclude reactor trip or other safety action when required.

1.4.7 ELECTRICAL SYSTEMS

Normal, standby and emergency sources of auxiliary electrical power are provided to assure safe and orderly shutdown of the plant and the ability to maintain a safe shutdown condition under all credible circumstances.

1.4.8 RADIOACTIVE WASTES

The radioactive waste treatment system is designed so that discharge of radioactivity to the environment is in accordance with the requirements of 10 CFR, Part 20.

1.4.9 SHIELDING AND ACCESS CONTROL

The plant is provided with a centralized control room having adequate shielding to permit occupancy during all credible accident situations. The radiation shielding in the plant, in combination with plant radiation control procedures, insures that operating personnel do not receive radiation exposures in excess of the applicable limits of 10 CFR, Part 20, during normal operation and maintenance.

1.4.10 FUEL HANDLING AND STORAGE

Fuel handling and storage facilities are provided for the safe handling, storage, and shipment of fuel and will preclude accidental criticality.

1.4.11 PROCESS STEAM

Process steam from the plant will meet regulations as to radioactivity content, within the applicable limits of 10 CFR, Part 20.

1.5 RESEARCH AND DEVELOPMENT REQUIREMENTS

The research and development programs that have been initiated to establish final design or to demonstrate the capability of the design for future operation at a higher power level are summarized as follows:

1.5.1 XENON OSCILLATIONS

An analysis to evaluate the possibility of xenon oscillations throughout core life is under way. A modal analysis to determine critical parameters has been completed, and the detailed spatial calculations are in progress. If it is determined that such oscillations may occur, appropriate design changes to eliminate or control the oscillations will be incorporated.

See also 3.2.2.2.3.

1.5.2 THERMAL AND HYDRAULIC PROGRAMS

B&W is conducting a continuous research and development program for heat transfer and fluid flow investigations applicable to the design of the Midland units. Two important aspects of this program are:

a. Reactor Vessel Flow Distribution and Pressure Drop Tests

A 1/6-scale model of the vessel and internals is under test to measure the flow distribution to the core, fluid mixing in the vessel and core, and the distribution of pressure drop within the reactor vessel.

b. Fuel Assembly Heat Transfer and Fluid Flow Test

Critical heat flux data have been obtained on single-channel tubular and annular test sections with uniform and nonuniform heat fluxes, and on the multiple rod fuel assemblies with uniform heat fluxes. These data have been obtained for a range of pressure, temperature, and mass velocities encompassing the reactor design conditions. This work is being extended to