THE CINCINNATI GAS & ELECTRIC COMPANY

CINCINNATI, OHIO 45201

W. H. DICKHONER
PRESIDENT

November 26, 1982

PRINCIPAL STAFF			
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U. S. Nuclear Regulatory Commission
Region III
799 Roosevelt Road
Glen Ellyn, Illinois 60137

Attention: Mr. J. G. Keppler
Regional Administrator

RE: Wm. H. Zimmer Nuclear Power Station Unit 1
Order to Show Cause and Order Immediately
Suspending Construction, Docket No. 50-358,
Construction Permit No. CPPR-88, W.O. 57300,
Job E-5590

Gentlemen:

This letter responds to Section IV.B.(1)(a) of the Order to Show Cause and Order Immediately Suspending Construction (CLI-82-33) in the captioned proceeding which requires that the independent organization conducting the review of the CG&E management of the Zimmer project be acceptable to the NRC Regional Administrator. Prior to the issuance of that Order by the NRC, it had become apparent to us that arriving at solutions to the various problems on the Zimmer project had been a much slower and complicated process than we anticipated even after the IAL and NOV were issued and that a fresh approach was necessary. Accordingly, we had concluded that some additional project management and problem-solving expertise should be brought to bear upon the Zimmer project.

Several outstanding and experienced architect-engineering firms were contacted for providing these services. One management consulting firm who has significant experience in the nuclear field was also considered. One of the architect-engineering firms was eliminated from serious consideration because of its not being sufficiently independent from the Company, utilizing criteria similar to those set forth by the NRC in its letter of February 1, 1982, to Congressman Ottinger. We solicited proposals from the other three firms for providing the type of expertise needed to assess the status of the project and then to complete it in full compliance with all applicable requirements. These proposals were analyzed by us and a determination made that the Bechtel Power Corporation was best qualified to meet the needs of the Zimmer project.

In my letter of November 10, 1982, to the five Commissioners, I set forth a proposed program for improving our construction and quality assurance programs, utilizing the Bechtel Power Corporation as a management, quality assurance and construction consultant.

On November 12, 1982, the subject Order to Show Cause and Order Immediately Suspending Construction was issued, which set forth a program for the Company to follow in order to resume safety-related construction activity at Zimmer. That program parallels the program set forth in my letter of November 10, 1982, and we believe that the selection process utilized in selecting Bechtel for our proposed program is also valid for selecting the independent organization to address the requirements of IV.B.(1) and (2) of the NRC Order of November 12, 1982.

Based on our review of the proposals submitted to us and on the experience and qualifications of the companies involved, we have determined that Bechtel fully meets all NRC requirements while at the same time is best qualified to meet our needs at Zimmer. The management consultant was eliminated from consideration because technical expertise as well as management ability is needed in these final stages of completion. Each of the companies we interviewed had outstanding credentials in specific areas, but the Bechtel Power Corporation had outstanding credentials in all reviewed areas of expertise needed for the successful completion of Zimmer and had a pool of individuals having expertise in a number of areas who could be drawn upon as necessary, as well as having complete independence from our organization.

Enclosed for your review is a proposal from the Bechtel Power Corporation dated November 23, 1982, which sets forth the manner in which it meets the requirements of IV B (1) and (2) of the November 12, 1982 Order. We believe that a review of Appendix B of the proposal attests to the quality and experience of the team that Bechtel brings to the Zimmer project. Appendix D demonstrates that Bechtel completely meets the independence requirements of a consultant as set forth in Chairman Palladino's response to Congressman Ottinger dated February 1, 1982.

I don't need to dwell on Bechtel's nuclear experience, which is a matter of record, but I would call your attention to Appendix C which reviews the Bechtel quality program. Bechtel admittedly has had some problems with Region III on the Midland Project, but we believe that the summary of quality program enhancements set forth in Appendix B will indicate to you, as it does to us, that the present Bechtel program would preclude similar problems at Zimmer.

In summary, we believe that the Bechtel Power Corporation is the best qualified consultant to solve the unique problems at Zimmer

and to fulfill the requirements set forth in Sections IV.B. (1) and IV.B. (2) of the NRC Order to the Company, dated November 12, 1982. We hereby request your approval of Bechtel Power Corporation as the independent reviewer to fulfill the requirements of the Order.

Yours very truly

THE CINCINNATI GAS & ELECTRIC COMPANY

By
W. H. Dickhoner

Enclosure

Bechtel Power Corporation
Engineers—Constructors

Fifty Beale Street
San Francisco, California
Mail Address: P.O. Box 3965, San Francisco, CA 94119

November 23, 1982

Mr. W.H. Dickhoner, President
Cincinnati Gas and Electric Company
139 East Fourth Street
Cincinnati, Ohio 45202

Dear Mr. Dickhoner:

Bechtel submits this revised proposal for providing completion services for your W.H. Zimmer plant. This revision to our proposal, originally submitted on November 8, 1982, responds to the Nuclear Regulatory Commission's Order to Show Cause dated November 12, 1982, and incorporates the requirements of the Independent Review of the Management of the Zimmer Project as outlined in section IV B (1) of that order. As requested, we have provided information regarding Bechtel's independence from Cincinnati Gas and Electric (Appendix D) and our qualifications and experience in QA/QC matters which has been appropriately added to Appendix C.

Our proposal is organized as follows:

Appendix A describes the objectives and approach to the Independent Review of the project which is proposed for accomplishment under the Technical Services Agreement submitted on November 8, 1982. This review which we have designated as Phase I is currently in progress.

Appendix B includes the resumes of the Independent Review Team members.

Appendix C includes summaries of Bechtel's nuclear experience which, as you know, is approached by no other company. We have added additional information describing Bechtel's capabilities and approach to managing project quality. (pp C-4 through C-13)

Appendix D includes information affirming Bechtel's independence from Cincinnati Gas and Electric and the Zimmer project.

We are prepared to mobilize a Quality Assurance Audit Team to verify the adequacy of the quality of construction of the Zimmer project in accordance with Section IV B (2) of the above mentioned Order to Show Cause. It is proposed that the team be headed by Mr. J.A. Amaral who is Bechtel Power Corporation's Corporate Quality Assurance Manager. Mr. Amaral is on my staff and is responsible to me for overseeing and coordinating all of Bechtel Power Corporation's Quality Assurance Programs. The team will include other Bechtel Senior Quality Assurance personnel selected from our various divisions. The Quality Assurance Audit Team will be separate from our Independent Review team. A more detailed description of our plan and approach for such audit will be forthcoming under separate cover.

During 1982, fuel was loaded on six of our units. Work was deferred or cancelled on four additional units. With these completions and cancellations, Bechtel is prepared to staff the Zimmer project with nuclear experienced personnel in all aspects of project completion management.

Bechtel remains committed to assisting Cincinnati Gas and Electric in the successful completion of the W.H. Zimmer Nuclear Station Project.

Sincerely,

A. H. Wahl for

H.O. Reinsch
President

HOR/lsw

Enclosures

cc: E.A. Borgmann

L6112382

PHASE I INDEPENDENT REVIEW OF THE MANAGEMENT OF THE ZIMMER NUCLEAR PROJECT

Objective

Perform an independent review of the management of the Zimmer project, including its quality assurance program and its quality verification program. Determine measures to be implemented to provide for completion of construction of the Zimmer plant in conformance with the Nuclear Regulatory Commission's (NRC) regulations and the Zimmer construction permit.

Approach

Based on our experience in performing independent reviews and providing project completion assistance on similar projects we recommend the following sequence and scope of review activities.

A. MANAGEMENT REVIEW OF PROJECT ORGANIZATION AND STATUS OF JOB

B. ASSEMBLE REVIEW TEAM

The team will be backed by senior management support and will provide proven capability in the following areas:

- Project Management/Construction Management experience
- Current Quality Assurance/Control programs
- Recent nuclear expertise
- Project controls
- Managerial capability

C. SURVEY AND REVIEW OF THE PROJECT

1. Project Quality Program

a. Review process for and translation of Licensing Commitments into specifications, drawings, quality assurance and control instructions, policies, procedures and construction work plans

b. Review Total Project Quality Program Structure

1. Is structure adequate (cover all quality related activities related to the design, procurement, construction and testing of the power plant)?

2. Are structure "areas of responsibility" clearly and adequately defined?

c. Review adequacy of organization, program, and staffing.

1. Client, A/E, constructor, contractors

2. Are responsibilities and duties within the organizations clearly and adequately defined?

d. Quality Assurance and Control for remaining work

1. Review of vendor and contractor certification and documentation

2. Action plan for closeout of NCRs

3. Audit program and adequacy of

e. Quality Confirmation Program

1. Completeness and adequacy (Logic, Methodology, Implementation - will it accomplish the objectives)?

2. Action plan for closeout of NCRs generated from this review program.

f. Review interfaces between QA, QC, craft supervision, field engineering and resident engineering.

1. Are these groups working as a project team utilizing team concepts?

g. Review program for training and certification of QA/QC Personnel.

2. Review Project Controls

a. Overall integration of project schedules:

1. Milestone Summary Schedule

2. Engineering, Procurement, Construction & System Turnover Schedule

3. On going QC inspection planning

4. QCP inspection/re-work schedule

5. Detailed work plans for designers, craftsmen

b. System Completion & Turnover Process

c. Design change control (Use of design "Freeze" and Design Change Package approach)

d. Field change control

e. System & Facility configuration control

f. Cost control

g. Administrative control

3. Review Construction Organization

a. Responsibilities and reporting relationships of field engineers. How do they interface with resident engineers, superintendents - systems or area basis?

. Who assembles quality documentation for field work.

c. Cost and Schedule controls; who develops and maintains?

d. Craft training and indoctrination for nuclear work.

e. Procurement and Warehousing controls

4. Review Nuclear Regulatory Commission Interfaces and Communication

a. Does official contact point exist at appropriate level of CG&E organization for:

1. Licensing

2. Region III Inspection and Enforcement (I&E) Inspectors

b. Is staffing level and authority adequate to provide timely response of best information with minimum impact on project operation?

c. Are appropriate people involved in NRC communication process? (e.g. Exit Interviews)

d. Who is responsible for managing timely resolution of 50.55 (e) open issues, Title 21 issues, NRC Bulletins, etc.?

e. How are impacts of open issues recognized or reflected in project schedule?

5. Review Status of Engineering for:

   a. Outstanding design issues not yet issued for construction, if any.

   b. Design change tools, controls, status of incorporation of changes in design drawings.

   c. Dispositioning of NCRs from QCP.

   d. Open issues with NRC licensing group (NRR).

   e. Status of Operating License SSER, ACRS Letter, and Public Hearing.

D. SURVEY AND REVIEW PROCESS

1. Interview key people regarding:

   a. Scope of responsibility

   b. Scope of authority

   c. Background and experience

   d. Problem areas

2. Obtain and review project procedures and reports for:

   a. QA & QC manuals (CG&E and Kaiser)

   b. Project Procedure Manuals for CG&E and Kaiser

   c. Schedule and Cost forecast

   d. Monthly progress reports for Engineering, Procurement, Construction and Start-up

E. KEY PEOPLE TO BE INTERVIEWED

Cincinnati Gas & Electric

W.H. Dickhoner	-	President & CEO
E.A. Borgmann	-	Senior Vice-President & Project Manager
B.R. Sylvia	-	Vice-President, Startup & Nuclear Operations
H.R. Sager	-	Quality Assurance Manager
J.F. Shaffer	-	Quality Confirmation Program Manager
B.K. Culver	-	Construction Manager
H.C. Brinkmann	-	Nuclear Engineering Manager
J.R. Schott	-	Nuclear Production Manager
J.D. Flynn	-	Nuclear Licensing Manager
W. Murray	-	Planning & Scheduling
K.K. Chitkara	-	Nuclear Service Manager

H.J. Kaiser

J. Coyle	-	Vice-President Power
M. Albertin	-	Project Manager
W. Hedzik	-	Site QA Manager
C. Stanfield	-	Construction Manager
B. Scott	-	Estimating & Cost Control Manager
D. Davis	-	QC Manager
H. Vitale	-	Quality Engineer Manager
G. Power	-	Records Manager

Nuclear Regulatory Commission

F. Christianson - Resident Inspector

Sargent & Lundy

T. Daly - Resident Project Engineer

Hartford Insurance

L. Burton - Authorized Inspector

State of Ohio

D. Milon - Boiler & Pressure Vessel Licensing Agency

F. RECOMMENDATIONS AND REPORT

Upon completion of the survey and review of the project, Bechtel shall formulate and submit to Cincinnati Gas and Electric (CG&E) recommendations regarding necessary steps to make sure that the construction of the facility can be completed in conformance with NRC regulations and the Zimmer construction permit. These recommendations will be submitted to CG&E in the form of a report. A copy of the report shall be simultaneously submitted to the Regional Administrator of the NRC. In making its recommendations, Bechtel shall consider at a minimum the following alternatives for management of the Zimmer project and shall weigh the advantages and disadvantages of each alternative:

1. Strengthening the present CG&E organization.

2. Creation of an organizational structure where the construction management of the project is conducted by an experienced outside organization reporting to the chief executive officer of CG&E.

3. Creation of an organizational structure where the quality assurance program is conducted by an experienced outside organization reporting to the chief executive officer of CG&E.

4. Creation of an organizational structure with both quality assurance and construction project management conducted by an experienced outside organization reporting to the chief executive officer of CG&E.

Independent Review Team

Division Management	-	W. G. Henry
Project Operations	-	G. B. Jones*
	-	R. K. Vassar (part-time)
Construction	-	D. M. Stover*
	-	C. Turbow
Project Controls	-	R. Soderholm
QA/QC	-	R. L. Scott*
	-	G. W. Stanley*
Code - Welding Inspection	-	L. L. Campbell
Startup Turnovers	-	J. G. Walker (part-time)
Engineering	-	R. L. Loos (part-time)
Document Control	-	C. Rixford (part-time)

The survey team will be headed up by G. B. Jones and will report to W. G. Henry, Vice-President and Deputy General Manager of the Ann Arbor Power Division.

The resumes of full time team members follow.

*Available for permanent Zimmer Project Team.

WILLIAM (BILL) GERALD HENRY

POSITION	Vice-President and Deputy General Manager
EDUCATION	BS, Civil Engineering, University of Washington BMC, Business Law, University of Washington
PROFESSIONAL DATA	Registered Professional Engineer in Alabama Contractor's License (BPG), Nevada

SUMMARY

6 months:	Vice-president and deputy general manager
1 year:	Vice-president and manager of division construction
4-1/2 years:	Manager of division construction
6 months:	Deputy manager of division construction
1-1/2 years:	Manager of construction
5 years:	Construction manager
1-1/2 years:	General superintendent
2-1/2 years:	Project superintendent
6 months:	Assistant superintendent
2 years:	Senior field engineer
3 years:	Field engineer
1 year:	Design engineer
2 years:	Heavy equipment supervisor
4 years:	Equipment operator

EXPERIENCE

Currently, Mr. Henry is vice-president and deputy general manager of the Ann Arbor Power Division.

Prior to his present assignment, Mr. Henry was vice-president and manager of division construction for Bechtel's Los Angeles Power Division where he was responsible for foreign and domestic construction activities. Previously, Mr. Henry was manager of construction for projects in the southwestern United States and Southern California and, later, deputy manager of division construction. As a construction manager in the Los Angeles Power Division, Mr. Henry was responsible for work on the Mohave, Rancho Seco, and San Onofre units.

WILLIAM (BILL) GERALD HENRY (Cont'd)

Mr. Henry has had considerable field experience since joining Bechtel in 1957 as a design engineer. Beginning in 1958, he worked as a field engineer on the Mammoth Pool hydropower plant in the Sierra and the Alamitos Steam Station gas turbine units. In 1963, he became assistant superintendent on the Etiwanda power plant project. From 1964 to 1967 Mr. Henry was project superintendent for Redondo Units 7 and 8, and in 1967 he was named general superintendent on the Mohave Generating Station. For the next three years Mr. Henry served as construction manager responsible for Mohave 1 and 2 and Four Corners 4 and 5.

Prior to joining Bechtel in 1957, Mr. Henry was a heavy equipment supervisor for the Army Corps of Engineers and an equipment operator for Henry Brothers Construction Company and the State Highway Department.

GEORGE B. JONES

POSITION	Project Manager
EDUCATION	BS, Electrical Engineering, University of California MS, Mechanical Engineering, Naval Post-graduate School
PROFESSIONAL DATA	Registered Professional Engineer in California Member, American Society of Mechanical Engineers Member, American Society of Naval Engineers Member, Project Management Institute

SUMMARY

6 years:	Project manager
2-1/2 years:	Engineering manager
9 months:	Deputy engineering manager
3-1/2 years:	Shipyard commander
1 year:	Deputy, fleet maintenance
5 years:	Planning/production officer
4 years:	Head of Piping, Valves, and Machinery Arrangement Branch

EXPERIENCE

Mr. Jones was Project manager of Hope Creek Unit 1 & 2, 1,100 MW BWRs for Public Service Electric & Gas Company. He is currently managing the close out operation on Unit 2.

Earlier, Mr. Jones was engineering manager for the following projects: Pilgrim 1 and 2 for Boston Edison Company; Jim Bridger 1, 2, 3, and 4 for Idaho Power & Light Company; Hope Creek for Public Service Electric & Gas Company; and Humboldt Bay for Pacific Gas & Electric Company. He also served as coordinator for Bechtel Power Corporation with respect to the use of automatic pipe welding equipment.

Mr. Jones joined Bechtel in January 1971 as deputy engineering manager for the Hope Creek Project.

GEORGE B. JONES (Cont'd)

Prior to joining Bechtel, Mr. Jones was shipyard commander with the U.S. Department of the Navy where he was responsible for all aspects of industrial operations of shipyard activity and the supervision of 6,500 people. Mr. Jones's thirty years of naval experience includes positions as deputy in charge of fleet maintenance, planning production officer, and head of the Piping, Valves and Machinery Arrangement Branch.

REFERENCE

Mr.Tom Martin
Vice President Engineering & Construction
Public Service Electric & Gas (of New Jersey)
(201) 430-7000, Extension 8316

DONALD M. STOVER

POSITION	Project Superintendent
EDUCATION	BS, Civil Engineering, University of Maine
PROFESSIONAL DATA	Professional Structural Engineer, Massachusetts Licensed to Practice, Province of Newfoundland
SUMMARY	5 years: Project superintendent 1 year: Project superintendent 3 years: Field superintendent 3 years: Staff assistant to construction manager 2 years: Assistant manager of construction 2 years: Construction manager 1 year: Project manager 4 years: Resident field manager 6 years: Structural designer and group leader
EXPERIENCE	Mr. Stover is currently project superintendent on 1100 MW BWR Hope Creek project responsible for field supervision of services which includes field subcontract administration. Act for field construction manager in his absence. Mr. Stover was project superintendent of services in Bechtel's San Francisco Power Division assigned to the Nuclear Fast Flux Test Facility. As field superintendent, Mr. Stover was responsible for all construction activities. Mr. Stover was staff assistant to construction manager responsible for coordinating construction department activities on four thermal power stations. Mr. Stover was assistant manager of construction for Acres Canadian Bechtel of Churchill Falls and he was responsible for field activities including inspection, administration, scheduling and cost reporting. As construction manager of Acres Canadian Bechtel of Churchill Falls, Mr. Stover was responsible for initial construction activities, definition and scope of major field construction contracts and administration of active field contracts. Mr. Stover was project manager of ammonia fertilizer complex for Bechtel Corporation.

DONALD M. STOVER (Cont'd)

Mr. Stover was resident field manager of Twin Falls Power Corporation on 4-unit hydro plant. He prepared scope of contracts; participated in bid reviews and awards; administered all site construction contracts; prepared cost and progress reports; commissioned and turned over plant to operating personnel.

REFERENCE

Mr. Pete Kudless
Public Service Electric & Gas (New Jersey)
(609) 935-7400

RICHARD W. SODERHOLM

POSITION: Technical Services Manager

EDUCATION: BS, Mechanical Engineering, University of California at Berkeley
Management Program, Bechtel

SUMMARY

2 months:	Technical services manager
1-1/2 years:	Project superintendent
1 year:	Field cost and scheduling supervisor
4-1/2 years:	Cost and scheduling supervisor
7 months:	Assistant cost and scheduling supervisor
1 year:	Staff assistant
2 years:	Corporate budget coordinator
1 year:	Senior cost engineer
1-1/2 years:	Cost engineer
3 years:	Field cost engineer

EXPERIENCE

Mr. Soderholm is currently technical services manager responsible for technical guidance and personnel administration of division technical services personnel on the Midland nuclear project.

Previously, Mr. Soderholm was project superintendent of construction services for the Midland nuclear project responsible for managing the following groups onsite: subcontracts, cost and scheduling, office services, document control, finance and accounting, procurement, safety, and personnel.

Mr. Soderholm transferred to the Ann Arbor Power Division in March 1980 as field cost scheduling supervisor assigned to Midland Units 1 and 2. He was responsible for all planning, scheduling, and cost control programs, which included productivity monitoring and control, field trending, and preparing all construction schedules.

While serving as cost and scheduling supervisor at the San Francisco Power Division, Mr. Soderholm was assigned to the Pebble Springs and Pilgrim 2 nuclear projects. He was responsible for implementing all planning and scheduling,

RICHARD W. SODERHOLM (Cont'd)

cost control, and quantity tracking programs in the office, and for the initial development of similar programs for the field.

Previously, Mr. Soderholm was staff assistant to the general manager of the Thermal Power Organization (TPO). He reviewed correspondence and procurement authorizations and prepared and coordinated presentations.

Mr. Soderholm was corporate budget coordinator for two years. He was responsible for coordinating overhead budgeting activities for Bechtel Group, Inc.

During his tenure with Bechtel, Mr. Soderholm has also served as senior cost engineer, cost engineer, and field cost engineer.

REFERENCE

Mr. Don Miller - Midland Site Manager
Consumers Power Company
(517) 631-8210

ROBERT L. SCOTT

POSITION	Assistant to Manager of Quality
EDUCATION	Business Management General Studies, Southern Illinois University; various company-sponsored courses such as Fundamentals of Computer Systems. Basic Radiographic Interpretation, Effective Writing, Nondestructive Testing, and Auditor Training.
PROFESSIONAL DATA	Registered Professional Quality Engineer in State of California; Member, American Society Quality Control
EXPERIENCE	Presently assigned as assistant to the Bechtel Manager of Quality at the Washington Nuclear Power Station (WNP-2) for Washington Public Power Supply System. Responsible for technical direction of the construction Quality Control program.
	Manager, Documentation Engineering - Bechtel Power Corp. Assigned as consulting Documentation Engineering Manager to a major mechanical contractor at the Washington Nuclear Power Station, Unit Number 2 for Washington Public Power Supply System. Responsible for direction and management of a quality documentation review and correction program, to enable certification of records necessary for nuclear plant licensing. (1 year)
	Project Quality Assurance Manager - Bechtel Power Corp. Assigned as project Quality Assurance Manager to the Grand Gulf Nuclear Power Station, two 1300 MW BWR units for Mississippi Power and Light Company. Responsible for direction and control of the project quality assurance program, as well as direction and management of project quality assurance activities. (4 years)
	Project Quality Assurance Engineer - Bechtel Power Corp. Served as project Quality Assurance Engineer on the 950 MW PWR Arkansas Nuclear One - Unit 2 for Arkansas Power and Light Company. Responsible for direction and control of the quality assurance program, representing the project on project related quality assurance matters. (4 years)

ROBERT L. SCOTT (Cont'd)

Manager of Quality Assurance - Westinghouse Nuclear Energy Systems Division. Before joining Bechtel, was an equal partner/owner of a steel fabrication and design company. Prior to this, was Manager of Quality Assurance in the Heat Transfer Division of Westinghouse Electric Corporation. Formerly was the West Coast Quality Assurance Representative and Senior Quality Engineer for Westinghouse Nuclear Energy Systems Division. Responsible for source surveillance/auditing of Westinghouse suppliers of NSSS components in California, Washington, Arizona and Colorado. Previously was responsible for quality assurance program and records planning for Westinghouse NES quality assurance consulting efforts for a utility, nuclear projects balance-of-plant equipment. (3 years)

Product Assurance Coordinator - Quality Engineering - Lockheed Propulsion Company; Unidynamics and Other. While with Lockheed Propulsion Company, was a Product Assurance Coordinator involved in quality engineering activities related to manufacturing planning of Navy nuclear reactor internal (core) components. Previous positions included Production/Quality Engineer initiating quality control inspection procedures for Unidynamics, St. Louis, and Manager of Quality Assurance for Scott Engineering and Welding Service responsible for development and implementation of a program to meet the requirements of MIL-Q-9858A. (3 years)

REFERENCE

Mr. Roger Johnson
Washington Public Power Supply System
Richland, Washington
(509) 377-2522 ext. 2712

G.W. STANLEY

POSITION Senior Construction Engineer

EDUCATION Courses at Kansas State University and Wichita State University

SUMMARY

2 years:	Project field engineer
1-1/2 years:	Systems superintendent and and assistant project field engineer
3-1/2 years:	Project construction quality control engineer
1 year:	Staff quality control supervisor
3-1/2 years:	Project quality control engineer and lead mechanical piping quality control engineer
5 years:	Lead quality control planner

EXPERIENCE

Mr. Stanley is presently assigned as project field engineer on the BWR Grand Gulf Power Station Units 1 and 2, 1,300 MW each, for Mississippi Power & Light Company, responsible for supervising and directing all field engineering activities. He has also served as the project systems superintendent responsible for construction completion and release of systems for startup testing. In addition, he was assistant project field engineer on this project, responsible for supervising Unit 1 field engineering activities.

Mr. Stanley was previously assigned as project construction quality control engineer for the PWR SNUPPS 1,150 MW Sterling Unit 1 nuclear project for Rochester Gas & Electric Corporation. He was responsible for staffing and supervising the field construction quality control organization and implementing the quality control program.

Mr. Stanley formerly served as quality control staff supervisor in Bechtel's Gaithersburg office, where he supervised the quality control technical staff and

G.W. STANLEY (Cont'd)

was responsible for the preparation of instructions and procedures, and providing technical guidance to field quality control engineers.

Prior to this, Mr. Stanley served as project construction quality control engineer on the PWR Calvert Cliffs Nuclear Power Station Units 1 and 2, 860 MW each, for Baltimore Gas & Electric Company. He was also assistant project construction quality control engineer and simultaneously acted as lead quality control engineer for construction testing operations. Earlier, he served as lead mechanical/piping quality control engineer, responsible for quality activities for the verification of safety-related mechanical and piping system installation. He also served on this project as mechanical quality control engineer for inspecting the installation of piping and mechanical activities.

Before joining Bechtel, Mr. Stanley was associated with The Boeing Company as lead quality control planner. He planned and developed quality control procedures, evaluated test plans and specifications for facilities installation as well as ground and flight test operations on the Apollo/Saturn program, and dealt extensively with the quality records system.

REFERENCE

Mr. Tom Cloninger - Project Manager
Grand Gulf Project
Mississippi Power and Light
(601) 437-8011, Extension 3784

LARRY L. CAMPBELL

POSITION	Quality Control Coordinator
EDUCATION	BS, Mechanical Engineering, Virginia Polytechnic Institute and State University
PROFESSIONAL DATA	Certified Level III Mechanical Quality Control Engineer Certified Level III Welding Quality Control Engineer

SUMMARY

1-1/2 years:	Lead quality control engineer
4 years:	Assistant lead field weld engineer
1 year:	Senior construction engineer
1 year:	Construction engineer
5 years:	Pipefitter

EXPERIENCE

Mr. Campbell is currently the quality control coordinator in the Ann Arbor Power Division primarily responsible for the coordination of activities at the Palisades and Fermi nuclear jobsites. He provides assistance to the chief construction quality control engineer for the remaining nuclear and non-nuclear construction quality control activities within the Ann Arbor Power Division.

Previously, Mr. Campbell was the lead quality control engineer at the Detroit Edison Fermi 2 Generating Station, assigned to the client's construction and maintenance quality assurance organization. He supervised the client's quality control staff in the performance of inspection activities and the preparation of program procedures, which included quality control instructions for construction and maintenance activities performed by contractors or the client's maintenance organization. Mr. Campbell is also a consultant for the client on American Society of Mechanical Engineers Sections III, IX, and XI, and on American Welding Society Code matters.

Prior to this assignment, Mr. Campbell was the assistant lead field weld engineer at the Limerick jobsite. He acted as the lead field weld engineer during his absence, directing and coordinating the activities of 28 personnel. He was responsible for preparing and writing technical reports to support jobsite welding activities.

LARRY L. CAMPBELL (Cont'd)

Before joining Bechtel, Mr. Campbell held various construction engineering assignments and was promoted to senior construction engineer at several nuclear power plants. He also completed a 4-year pipefitter apprentice program while working at a nuclear shipbuilding company.

REFERENCE

Mr. Tullio A. Alessi
Director of Project Quality Assurance
Fermi Project
Detroit Edison Company
(313) 586-5513

JOHN G. WALKER

POSITION	Project Manager
EDUCATION	BS, Mechanical Engineering, Texas A&M University
PROFESSIONAL DATA	Registered Professional Mechanical Engineer in Texas Registered Professional Nuclear Engineer in California Member, American Nuclear Society
SUMMARY	3 years: Project manager 1 year: Manager of startup and operating services 6 years: Chief startup engineer 2 years: Project startup engineer 3 years: Senior startup engineer 2 years: Senior results engineer 3 years: Results engineer

EXPERIENCE

Mr. Walker is currently project manager for Bechtel's work on Detroit Edison's Fermi 2 project.

Mr. Walker was manager of startup and operating services in Bechtel's San Francisco Power Division. Previously, as chief startup engineer he had overall responsibilities for division startup operations.

As a project startup engineer on a number of projects, Mr. Walker was responsible for total plant startup activities. Previously, as a startup engineer, he was responsible for plant cleaning and flushing and power testing.

Mr. Walker was previously a startup engineer on the Great Canadian Oil Sands project where he provided technical direction and coordination of power plant and utilities startup.

JOHN G. WALKER (Cont'd)

Prior to joining Bechtel, Mr. Walker was a senior results engineer with the Texas Electric Service Company where, as a plant operations supervisor, he was in charge of operating personnel; he also directed startup of a 550 MWe fossil plant addition. As a results engineer, he prepared and conducted plant performance tests and worked as a shift operations supervisor.

REFERENCE

Mr. Harry Tauber
Group Vice President
Detroit Edison Company
(313) 237-6696

BECHTEL NUCLEAR EXPERIENCE

This section describes Bechtel's capabilities and experience as the leader in providing engineering and construction services to the nuclear industry.

BECHTEL QUALIFICATIONS AND RECORD IN NUCLEAR POWER

- 30 YEARS OF NUCLEAR POWER EXPERIENCE
- 91 NUCLEAR PLANTS DESIGNED OR CONSTRUCTED
- 73 NUCLEAR PLANTS WITH BECHTEL AS CONSTRUCTION MANAGER/ CONSTRUCTOR
- TOTAL CAPACITY EXCEEDS 78,000 MEGAWATTS
- RESPONSIBLE FOR CONSTRUCTION MANAGEMENT/CONSTRUCTION OF 25% OF CURRENTLY OPERATING NUCLEAR UNITS
- SELECTED FOR THREE MILE ISLAND RESTORATION WORK
- SELECTED FOR PROJECT COMPLETION OF 7 UNITS CURRENTLY IN PROGRESS
- LEADER IN DEVELOPING AND APPLYING EFFECTIVE PROJECT CONTROL TOOLS FOR NUCLEAR PROJECTS
- QUALITY ASSURANCE/QUALITY CONTROL PROGRAMS DEVELOPED TO RESPOND TO 10CFR50 APPENDIX B AS WELL AS ASME CODES

General Nuclear Experience

Bechtel has been a pioneer in the nuclear power field: first was the nuclear accelerator at Los Alamos, New Mexico, then came Arco, proving that power-generating atomic heat could be produced, controlled, and used. In the following year, the company performed the engineering for the Mark I and Mark II Materials Testing Accelerator Project in Livermore, California. Next, it constructed the $20 million AEC Chemical Fuel Processing Plant in Idaho.

Bechtel provided construction management and engineering for the installation of a turbine generator at General Electric Company's Knolls Atomic Laboratory in West Milton, New York. This installation, utilizing byproduct energy from the prototype reactor for the U.S. Navy submarine Sea Wolf, supplied the first nuclear-fueled power for commercial use in 1955.

Also for General Electric, near Pleasanton, California, Bechtel had complete responsibilities from engineering through construction of the Vallecitos Atomic Laboratory. Vallecitos, as an experimental facility, made its greatest contribution by demonstrating increasing efficiency and output, and thus reducing cost of nuclear power.

A milestone in Bechtel's growth with the nuclear industry came in 1959 with completion of the Commonwealth Edison Company's Dresden Nuclear Power Station in Morris, Illinois. This was the country's first large, privately financed nuclear power plant. Bechtel was engineer-constructor, responsible for all construction and design, except for the nuclear package.

Through these, and other projects, Bechtel has maintained its position within this rapidly evolving industry with participation in many advanced projects involving studies, evaluations, engineering, and construction milestones. Some highlights of these activities are:

- Comprehensive design and construction services for first nuclear addition to a conventional steam plant, Humboldt Bay 3.
- Engineering services for the first nuclear power unit with a pressure suppression containment - APPR-1A.
- Development and construction of the first fully prestressed, post-tensioned concrete containment vessel - Palisades 1.
- Comprehensive design and construction services for the first nuclear power plant with a field fabricated reactor vessel - Monticello 1.
- Engineering, procurement and construction of Tarapur, India's first commercial nuclear power plant. This required extensive training of workers and close supervision of local subcontractors.

- High Temperature Gas Cooled Reactor Plant Studies and Designs.
- Standardized Nuclear Unit Power Plant System.
- Liquid Metal Fast Breeder Reactor Program, Fast Flux Test Facility Engineering and Construction.
- Engineering and Construction of San Onofre Units 2 and 3 with seismic design criteria of 0.66G, one of the world's highest.

Bechtel has experience with nearly all types of reactor design and power concepts. Bechtel is not associated permanently with any manufacturer or agency but works with all major worldwide suppliers of nuclear steam supply systems and turbine generators.

Today, in its third decade of service to the nuclear industry. Bechtel has participated in the design engineering and/or construction of 91 major nuclear plants in the United States and worldwide. The total capacity of these projects is in excess of 78,000 megawatts.

Many technical and economic studies, safety analyses, licensing preparations and presentations for state of the art and advanced fission and fusion nuclear power plants, and the nuclear fuel cycle from mining to waste storage have been performed and completed. For example, a study was completed concerning the licensability in the United States of the French Phenix, fast breeder reactor. Other studies have covered spent fuel pool expansions, temporary and permanent waste storage, and recovery of Three Mile Island Unit 2.

QUALITY PROGRAM

Bechtel Philosophy, Approach and Capabilities to Managing Project Quality

A. GENERAL

Since its beginning, Bechtel's work has been characterized by quality and committment - quality services provided by professionals committed to meeting client requirements and project objectives. Through our long involvement of more than 30 years in designing and constructing nuclear plants, we have gained considerable expertise and developed effective tools and procedures for maintaining the required level of quality for nuclear projects. The following highlights our philosophy, approach, and capabilities.

B. PHILOSOPHY

The basic implementing philosophy of the quality assurance program is described as follows:

1. Quality of work and the control of quality is the responsibility of the individuals and functional organizations performing the work.

2. Quality performance requires that individuals have appropriate skills and are provided with adequate instruction, suitable tools and procedures, and the proper definition of the job requirements.

3. Quality is verified through surveillance, inspection, testing, checking, auditing and review of work activities, and documentation.

4. Quality verification is the responsibility of the organization or group performing the activity, but is performed by individuals other than those directly responsible for performing the work activity.

5. The extent to which appropriate levels of quality are verified and documented depends upon the importance of the work to plant function or safety, as well as contract applicable requirements and applicable regulations, codes, and standards.

C. APPROACH

A division general manager has overall responsibility for the quality assurance program and for its execution on all projects. The manager of division quality assurance reports to the general manager and assists in fulfilling this responsibility.

The quality assurance program is implemented by designated functional organizations (engineering, procurement, construction, project operations, administrative services, specialty groups, and quality assurance) utilizing approved policies, procedures, and instructions.

The quality assurance department performs a management function independent of the organization or group performing the activity. Quality assurance personnel report to the manager of division quality assurance.

The quality assurance department, under the direction of the manager of division quality assurance, is responsible for the following:

1. Providing technical direction for the division quality assurance program and quality-related activities of the quality engineering, quality control, and division procurement supplier quality functions.

2. Formulating the division quality assurance program policies (standard NQAM) and quality assurance department procedures, as well as reviewing and approving quality program implementation procedures prepared by division department and support organizations. Authorizes project quality assurance programs (project NQAM) which are modifications of the division quality assurance program to meet unique project requirements.

3. Controlling and implementing the division audit program conducted to ensure compliance with quality requirements.

4. Maintaining an awareness of quality program status and adequacy and providing periodic reports to management thereon.

5. Coordinating quality concerns with centralized quality functions outside of the division.

D. BECHTEL POWER CORPORATION CAPABILITIES

1. Personnel (10/82)

- 235 quality assurance engineers
- 115 quality engineers
- 1157 quality control engineers
- 298 procurement supplier quality personnel
- 86 material and quality services personnel
- Separate quality control departments established in 1970
- Separate quality assurance departments established in 1972

2. Established Procedures and Programs

- NRC Approved Topical Report (BQ-TOP-1)
- Nuclear Quality Assurance Manual (established 1968)
- Bechtel Quality Assurance Manual for ASME Section III, Division 1 and 2 ("N" stamp holder)
- Standard Departmental Implementing Procedures (Supplemented and modified to meet unique project requirements)
  - Engineering Department Procedures
  - Construction Work Plan/Procedures
  - Procurement Contracts and Purchases Manual
  - Construction Quality Control Manual
  - Procurement Supplier Quality Manual
  - Administrative Services Department Procedures
  - Quality Assurance Department Procedures
  - Material and Quality Services Policies and Practice Guides

- Engineering Standard Technical And Quality Specifications
- Procurement's Evaluated Suppliers List
- Corrective Action/Trending Programs
- AAPD Quality Improvement Program
- Audit and Inspection Programs
- Training Programs
- Nuclear Newsletter/Licensing Information System

3. PROJECTS

- Engineering/Procurement/Construction/Management services for more than 90 nuclear units
- 13 nuclear units completed in the last 5 years (includes units currently in low-power testing)
- 37 nuclear units currently under construction
- Providing services at more than 20 operational nuclear units

RECENT ENHANCEMENTS TO BECHTEL'S QUALITY PROGRAM

Bechtel has continuously modified and enhanced quality program activities to reflect new or modified requirements, client's needs, and to detect and prevent recurrence of problems. Following is a summary of major recent quality program enhancements:

A. INCREASED QUALITY EXPERIENCE THROUGH EXPANDED MIDWEST ROLE

Bechtel's total experience in quality assurance/quality control, especially as pertinent to NRC Region III philosophy, is increasing through an expanded role in Midwest nuclear activities. Involvement in engineering and/or construction now includes five operating projects (Dresden/Quad Cities, Davis Besse, Monticello, Duane Arnold, and Palisades) as well as three projects under construction (Fermi II, Marble Hill, Midland and Calloway (SNUPPS)). In some cases the work is done directly under the utilities program thus allowing experience derived from working under a program other than that developed by Bechtel.

B. IMPROVEMENT OF COMMUNICATIONS AND RESPONSIVENESS TO NRC REGION III

The Ann Arbor Power Division (AAPD) recently assessed its communications and responsiveness with NRC Region III by employing an outside consultant to provide an independent view, and performing a self analysis by senior management. In addition, division management met with NRC Region III management to discuss areas of mutual concern. Future meetings are planned to discuss generic quality issues.

C. INDEPENDENT SELF REVIEWS TO ASSESS QUALITY PROGRAMS

AAPD has utilized the services of experienced Bechtel personnel independent of the division and of its projects to conduct two recent self reviews of work and methods. In one case, a ten man team was assembled to review design on the Midland project. In the other case, a three man team was assembled to review the Midland site quality program as related to completion and turnover of systems. In this second review, the role of the field engineer in obtaining quality was emphasized.

D. DIVISION QUALITY IMPROVEMENT PROGRAM

In the second half of 1980, the AAPD instituted a Quality Improvement Program which includes the following policy, principles, sponsorship and implementing subprograms:

Policy:

"To improve quality, we shall provide clearly stated requirements, expecting each person to do the job right the first time in accordance with such requirements or cause the requirements to be officially changed."

Principles:

- It is believed that personnel wish to do their job correctly the first time.
- Necessary attributes of doing jobs correctly the first time include "attention to detail," "clear and visible job requirements," and "workable tools and methods."
- Each employee must be aware of his/her role in any improvement program for that program to succeed. Teamwork, in which efforts may have to be coordinated with other employees, is also necessary.

Sponsorship:

The AAPD Quality Improvement Program is sponsored by the general manager creating an interdepartmental steering group with responsibility for maintaining a program that promotes achievement and improvement of quality by all employees in all assignments.

Implementing Subprograms:

Four implementing subprograms; training, promotion, feedback, and quality measurement are designed to reach each employee and maintain a positive attitude toward achievement and improvement of quality regardless of assignment.

E. TECHNICAL AUDITS

In the second half of 1980 shortly after the Ann Arbor Office became a separate division, the QA department embarked on a program to shift the emphasis of QA management audits from programmatic to technical attributes. This was accomplished via inclusion of technical specialists on audit teams and shifting the emphasis of checklists from programmatic to technical attributes.

Audit participation by technical specialists for 1981 and 1982 (to 11/22/82) is shown below.

Year	Total No. of Audits	No. of Audits with Tech. Spec. on Audit Team	Total No. of People on Audit Teams	No. of Tech. Spec. on Audit Teams
1981	25	9	66	14
1982 to 11/22/82	18	12	58	20

F. CERTIFICATIONS

1. Certification of QA Audit Personnel

In April, 1981 the QA department implemented ANSI N-45.2.23 for certification of QA audit personnel. As of 11/22/82, 73% of the QA department personnel were certified lead auditors. Remaining personnel are either new to the department, certified auditors, or working in the Midland MPQAD group and certified under the utilitie's auditor/lead auditor certification system which also complies with ANSI N-45.2.23.

2. Certification of QC Personnel

Bechtel certifies their quality control engineers to a program meeting the requirements of ANSI N-45.2.6. We have had recent experience at the Midland jobsite performing recertification and requalification of quality control inspectors which allows us to better understand the requirements of NRC Region III in this area. We would utilize this experience in judging the capabilities of the Zimmer quality control certification process.

G. TRAINING

1. QA Training

The QA department in the second half of 1980 embarked on an expanded and intensified training program for quality assurance engineers. This program was implemented under the joint leadership of both the utility (Consumers Power) QA, and Bechtel QA staffs. Bechtel quality assurance engineers are required to take five mandatory courses which are orientation, functional, written communication, oral communication and auditor training. In addition, eleven Bechtel sponsored standard QA training courses are available and are used extensively on an as needed basis. Also supplemental special training courses are developed and presented on an as needed basis. Instructors are obtained from within the QA department and other departments.

The division has also provided auditor training to 220 utility (Consumers Power, Detroit Edison, and Power Authority of State of New York) and 62 Bechtel personnel.

2. Engineering

The Engineering department has a basic training program consisting of eight modules of classroom instruction and one module of on the job training. In addition supplementary training sessions are provided on an as needed basis. Training modules are and have been enhanced to reflect current conditions and problem areas such as SDDR control and computer program verification control.

3. QC/Construction Training

The AAPD jobsites have recently implemented an enhanced construction training program consisting of over 80 programs in the technical disciplines. The programs are primarily used for cross discipline training of non-manual personnel (field engineers and superintendents). In addition, some programs have been modified for use for QC engineers and craft training.

H. CORRECTIVE ACTION

1. Generic Corrective Action Program

In the second half of 1980, a new generic corrective action program was implemented. The purpose of this program was to streamline the existing corrective action process by assigning potential problem documents to single action leaders (management level or chief engineer) for investigation as to applicability to AAPD projects. This program reduced the amount of partial redundant investigations being performed and reduced the possibility of missing important problems generic to our work. A databank exists with sort capabilities that can be utilized on the Zimmer project for investigation purposes.

2. Centralized Information Dissemination System (CIDS)

In 1982 a Bechtel Power Corporation program was initiated which includes problem/corrective action input from all divisions. This program is called "Centralized Information Dissemination System" (CIDS). Problem deficiency documents are inputed to a common databank by all four division offices. This databank of information with sort capabilities is also available for use during investigations at the Zimmer site.

I. CONSTRUCTION ROTATION PROGRAM

Over the last two years the AAPD construction department instituted an extensive rotation program for field and quality control engineers rotating them from one group to another. This rotation program has two major benefits which are:

- Upgrades personnel by broadening their experience
- Enhances interfaces and communications by providing both groups with an understanding of the operations of the other group

J. ENGINEERING DEPARTMENT PROCEDURES

Ann Arbor Power Division, Engineering Department has set up mechanisms to more efficiently and effectively adapt their procedures to projects with varied scope of services, and has made procedural modifications to preclude recurrence of identified past problems.

K. SUPPLIER QUALITY DEPARTMENT

1. Document Re-Review

Bechtel has broad experience in performing supplier quality document re-review. Extensive re-reviews have been performed on the following projects:

- Limerick Units 1 & 2
- Susquehanna Units 1 & 2
- Midland Units 1 & 2
- WWPPS Units 1, 2, & 4
- South Texas Units 1 & 2

2. [illegible]raceability

Be[illegible]has been a leader in implementation of material traceability as required in the 1974 Edition of ASME Section III, NA 3700/NCA3800. A corporate policy has been established and resulted in a training and corrective action program for nuclear projects. In January 1981, Bechtel determined the bolting industry to be in noncompliance and was instrumental in gaining their compliance.

3. Procurement Supplier Quality Plans

In early 1982 Bechtel's Supplier Quality Department established more extensive inspection plans and technique sheets to assure compliance to specifications.

4. Procurement Supplier Quality Training

Bechtel's Supplier Quality Department has developed new/modified training programs for shop inspectors and project personnel in the following areas:

- Document Review Program 6/81
- Guidelines for Compression Type Wire Connectors 3/82
- Electrical Commodities 9/82
- Electrical Codes and Standards 10/82
- AWS Welding 11/82

Bechtel's Supplier Quality Department is planning to issue the following new training programs:

- TS-40 Soldering and Electrical Terminations 12/82
- TS-41 Electrical Testing 1/83
- TS-22 Inspection of Mechanical Commodities 2/83
- TS-10 ASME Boiler and Pressure Vessel Code 3/83
- TS-7 Coatings 3/83
- AWS Radiographs of Welds 3/83

Nuclear Plant Construction
Management/Construction Experience

Bechtel's nuclear plant construction experience dates back to 1950. Since then Bechtel has been responsible for the construction of 73 nuclear units. Our involvement has ranged from projects when we were the construction manager only with all work being performed by contractors to assignments where virtually all of the work was performed directly by Bechtel.

Most projects included a combination of the above. Substantial work is performed by Bechtel forces (± 60%). The remaining work is performed by specialty contractors with Bechtel providing construction management services. This combination of experience makes Bechtel uniquely qualified in that our field engineers and supervisors have acquired a breadth of understanding of both managing as well as directly performing the work.

The following table taken from Kidder, Peabody & Company's March 30, 1982 "Status Report on Engineers and Construction Managers for Electric Utility Nuclear Reactors and Fossil Boilers (as of 12/31/81)", depicts Bechtel's preeminence as a Construction Manager for domestic nuclear power plants.

Engineers and Construction Managers
Summary - Construction Managers, Nuclear Reactors, Domestic

Manager	Operating #	Operating MWE	Operating %	To Be Operated #	To Be Operated MWE	To Be Operated %	Total #	Total MWE	Total %
American El Pr Service Co	2	2,120	3				2	2,120	1
Baldwin				2	1,866	2	2	1,866	1
Bechtel	25	18,813	27	20	22,429	26	45	41,242	26
Brown & Root	2	1,642	2	2	2,300	3	4	3,942	3
Burns & Roe	3	1,508	2				3	1,508	1
C.F. Braun	1	644	1				1	644	
Commonwealth Edison	2	2,100	3	8	8,936	10	10	11,036	7
Consolidated Ed NY	1	265					1	265	
Daniel	5	4,608	7	6	6,093	7	11	10,701	7
Duke Power	7	7,678	11	6	7,310	8	13	14,988	10
Ebasco	6	4,238	6	6	6,796	8	12	11,034	7
Georgia Power	2	1,581	2	2	2,220	3	4	3,801	2
Gibbs & Hill	1	457	1				1	457	
J.A. Jones	1	825	1				1	825	1
Kaiser Engineers	1	850	1	1	810	1	2	1,660	1
Miscellaneous	1	52					1	52	
Northern States Pr	2	1,060	2				2	1,060	1
Pacific Gas & El				2	2,190	3	2	2,190	1
Pub Serv Indiana				2	2,260	3	2	2,260	1
Pub Serv Oklahoma	2	2,300	3				2	2,300	1
Stone & Webster	7	4,854	7	5	4,458	5	12	9,312	6
Tenn Valley Auth	4	4,345	6	13	15,896	18	17	20,241	13
United Engineers & Const	8	7,148	10	2	2,300	3	10	9,448	6
Virginia El & Pr				1	938		1	938	1
Westinghouse	2	1,838	3				2	1,838	3
Wisconsin Pub Serv	1	541	2				1	541	
Total	86	69,467	100	78	86,802	100	164	156,269	100

Nuclear Plant Project Completion Services Experience

Owner	Unit	Services
Washington Public Power Supply System	WNP - 1	Project management Construction management
	WNP - 2	Project management Construction management
	WNP - 4*	Project management Construction management
South Texas Project	South Texas-1	Project management Engineering Procurement Construction management
	South Texas-2	Project management Engineering Procurement Construction management
Pacific Gas & Electric	Diablo Canyon 1	Project management Engineering Construction management
	Diablo Canyon 2	Project management Engineering Construction management
Detroit Edison Company	Fermi 2	Construction (punch listing) Startup Maintenance

* Unit later cancelled.

Experienced Power Plant Engineering and Construction Personnel

Bechtel's ability to provide clients with specific services and expertise is made possible by the number and diversity of experienced personnel available within the organization.

More than 43,000 professional, technical, and support personnel are employed by Bechtel on projects throughout the world. More that 50 percent of these are graduate engineers. As manloading requirements change on various projects, Bechtel has the flexibility to meet the needs of all the divisions of the Bechtel group of companies. Within Bechtel Power Corporation, there are more than 20,000 personnel. These include:

- 55 nuclear power plant project managers
- 65 nuclear power plant construction managers
- 1,060 nuclear power plant planning, scheduling, and estimating personnel
- 1,157 quality control personnel*
- 2,000 power plant field engineers
- 600 power plant construction supervisors
- 235 quality assurance personnel
- 200 nuclear and environmental engineers
- 2,900 procurement personnel worldwide
- 3,000 project support personnel including personnel qualified in
  - labor relations
  - safety
  - rigging
  - welding/metallurgy
  - nuclear licensing
  - containment design
  - health physics
  - security

*Quality Control department established in 1970

AVAILABILITY OF EXPERIENCED NUCLEAR PERSONNEL

The availability of experienced Bechtel nuclear personnel for assignment to the Zimmer Project is evidenced by the completion or cancellation during 1982 of the following nuclear units:

Units With Fuel Loaded During 1982:

Kuosheng	Unit 2
ASCO	Unit 1
San Onofre	Unit 2
San Onofre	Unit 3
Grand Gulf	Unit 1
Susquehanna	Unit 1

Units Deferred or Cancelled During 1982:

WNP	Unit 1
WNP	Unit 4
Hope Creek	Unit 2
Limerick	Unit 2

Participation in Codes and Standards Committees

In recognition of the important role that the National Codes and Standards program occupies in the development and application of commercial nuclear power, Bechtel participates extensively through the commitment of experienced engineers on national codes and standards committees. A review shows that Bechtel Power Corporation had 105 engineers serving on 234 committees. A breakdown of this service is shown below. An additional 40 to 50 engineers from other Bechtel organizations also participate in the national codes and standards program.

Bechtel participation in codes and standards work benefits a client's project in two ways. The most direct benefit is that the latest issues, some of which may not be published yet, can be considered. Probably the most important benefit is the feedback from actual engineering and construction work to the various code committees. This enables consideration of special requirements in the development of the industry standards required for commercialization.

Bechtel Power Corporation
Participation in Code and Standards Committees

Activity	Number of Engineers	Number of Committees
ANS	24	34
ANSI	20	35
ASME	28	55
ASTM	6	24
IEEE	28	51
Others	22	35
	128*	234

* 23 engineers participate in committees from more than one Society

PROJECT MANAGEMENT

Bechtel's project team concept requires that projects be carried out under the direction of a project manager who will manage, schedule, and integrate the many project activities. The project manager is the Bechtel team leader and is responsible to the client and Bechtel management for the successful completion of the project in accordance with agreed-upon objectives. He has direct and continuing access to the division general manager. He is Bechtel's prime point of contact with the owner, acting through whatever organizational approach the owner designates.

At the onset of a project, the Bechtel team leader, working with the owner, establishes project objectives and directs the formulation of the project plan to meet them. He ensures that the project team is appropriately staffed with qualified personnel. He and his team establish the procedures and project controls to be used, tailoring them to the specific project and obtaining the owner's organization, procedures, and desires. He establishes strong formal and informal communications channels, not only between himself and his owner counterpart but also between Bechtel-owner channels at appropriate key team levels. Supporting and complementing these, he arranges reporting means to give the project visibility desired by the owner and Bechtel management. He arranges documentation of objectives, plans, and procedures and ensures that the project technical scope and the detailed Bechtel scope of services and documented to the owner's satisfaction.

The Bechtel team leader, acting through his key team members, monitors all project activities from inception through completion, adjusting the project plan as necessary to meet changing objectives or circumstances, always in concert with and to the detail required by the owner. He and his team identify departures from the plan and take appropriate corrective action. He is also the administrator of the Bechtel-owner contract and is responsible for execution and close out to the owner's and Bechtel management's satisfaction. In summary, the Bechtel team leader makes sure that the project members are working in the close rapport required and that they are appropriately supported by the strength of the Bechtel division and corporate resources.

The project manager acts for the owner using the project management concept. He receives directions, develops instructions, receives reports, and prepares recommendations to be submitted to the owner.

Engineers, contractors, and suppliers receive their instructions from the project manager, perform their assigned tasks, and report results to the project manager.

In summary, the project management team functions as an extension of the owner's organization and acts on behalf of and in the interest of the owner to:

- Establish budgets, control costs, and ensure adherence to schedules
- Manage and integrate planning and engineering work by design firms
- Procure major plant equipment, services, and supplies
- Coordinate and manage the activities of construction supplies
- Supervise preoperational testing

PROJECT CONTROLS

INTRODUCTION

In the execution and management of large, complex projects, numerous organizations become involved in the process of design and construction. Careful coordination of these organizations is needed to provide the proper flow of drawings and materials to a site, and the proper sequencing of construction and startup activities.

Fundamental to this coordination is a wide range of activities that include the development of a project plan, operating policies and procedures, organization charts and responsibility assignments, and the scoping of work segments. Equally essential is the implementation of a project control system that provides consistent and accurate project status for client and Bechtel management visibility and decision making.

Bechtel, with its broad experience in major engineering and construction projects, maintains a comprehensive library of state-of-the-art cost, schedule, and material control programs that can be modified for project uniqueness and for client internal and external reporting and control requirements. After project and client requirements are specified and program selections made, the programs are assembled into an integrated project control system.

Bechtel's project control programs are viable programs that can be used on projects without the need for change. They can, however, be modified as necessary to meet specific client or project requirements.

SYSTEM DESCRIPTION

The project control system is based on existing programs, but is tailored to meet specific client requirements. In general, the control system consists of:

a. A mutually agreed-upon project plan that incorporates resultant schedules and cost and quantity budgets

b. A monitoring plan that continually measures actual performance against the plan

c. A reporting program that identifies deviations from that plan

d. An action program to anticipate and correct project-related problems, and to take advantage of project-related opportunities.

The project plan defines the scope of work, identifies services to be provided, assigns responsibilities, and identifies controls, methods, and procedures for meeting agreed-upon objectives.

The plan is modified as necessary to accommodate client requirements and, when mutually approved by client and Bechtel management, becomes the basis for measurement of project performance. Reports to client management indicate the status and progress of the project and project performance.

The plan is expanded, refined, and updated as required as the project passes through the phases of design, procurement, construction, and startup. Visibility of the plan ensures that control can be accomplished by responsible individuals at each organizational level for all project phases. To accommodate this visibility, control programs are designed on a modular concept so that each can stand alone as a control tool yet be fully integrated into the project control system.

Integration of the program modules is accomplished through the use of standardized codes for activities, quantities, and cost. This coding system is an interrelated series of structured numbers which provide a set relationship of the detailed elements in each module to each other, to all other modules in the system, and to the project as a whole. Individual modules can be manual or automated depending on project requirements without affecting module approach or methodology; this provides significant flexibility in arranging the tools to support client and Bechtel management requirements while still maintaining system integrity.

The project control system consists of three primary programs: schedule control, cost control, and material control.

Bechtel's standardized approach to schedule control utilizes an integrated system of computerized and noncomputerized planning and scheduling techniques and procedures that assist the client and Bechtel management in developing a valid plan, monitoring performance, and producing reports that permit redirection of plan objectives to the best interest of the project.

Bechtel's cost control system is supported by a code of accounts which provides an overall project structure to the various estimates and budgets used to accomplish cost control. Forecasting is performed periodically along with a continuous monitoring system consisting of trending, home office cost control, and procurement cost control.

Bechtel provides an overview of the project scope of defining materials from conceptual quantities through detail design takeoff with a sophisticated and comprehensive material control system. Material control encompasses the identification, quantification, and status updating to provide visibility of equipment and material scope during all phases of a project. Quantification of basic materials enables the project scope to be measured in terms common to engineering, construction, and the support services.

PROGRAM SELECTION

The project control system is administered by Bechtel's project manager; he is responsible for module coordination, implementation, and updating. The modules that make up specific programs are identified in policy manuals. The client and Bechtel may select the most appropriate tools from these manuals, and decide if operation of the system should be fully automated, partially automated, or manual. The project's cost/schedule supervisor, engineer, field construction manager, and startup engineer have the responsibility of supporting the project manager in this activity. Functional departments are responsible for providing guidance and input.

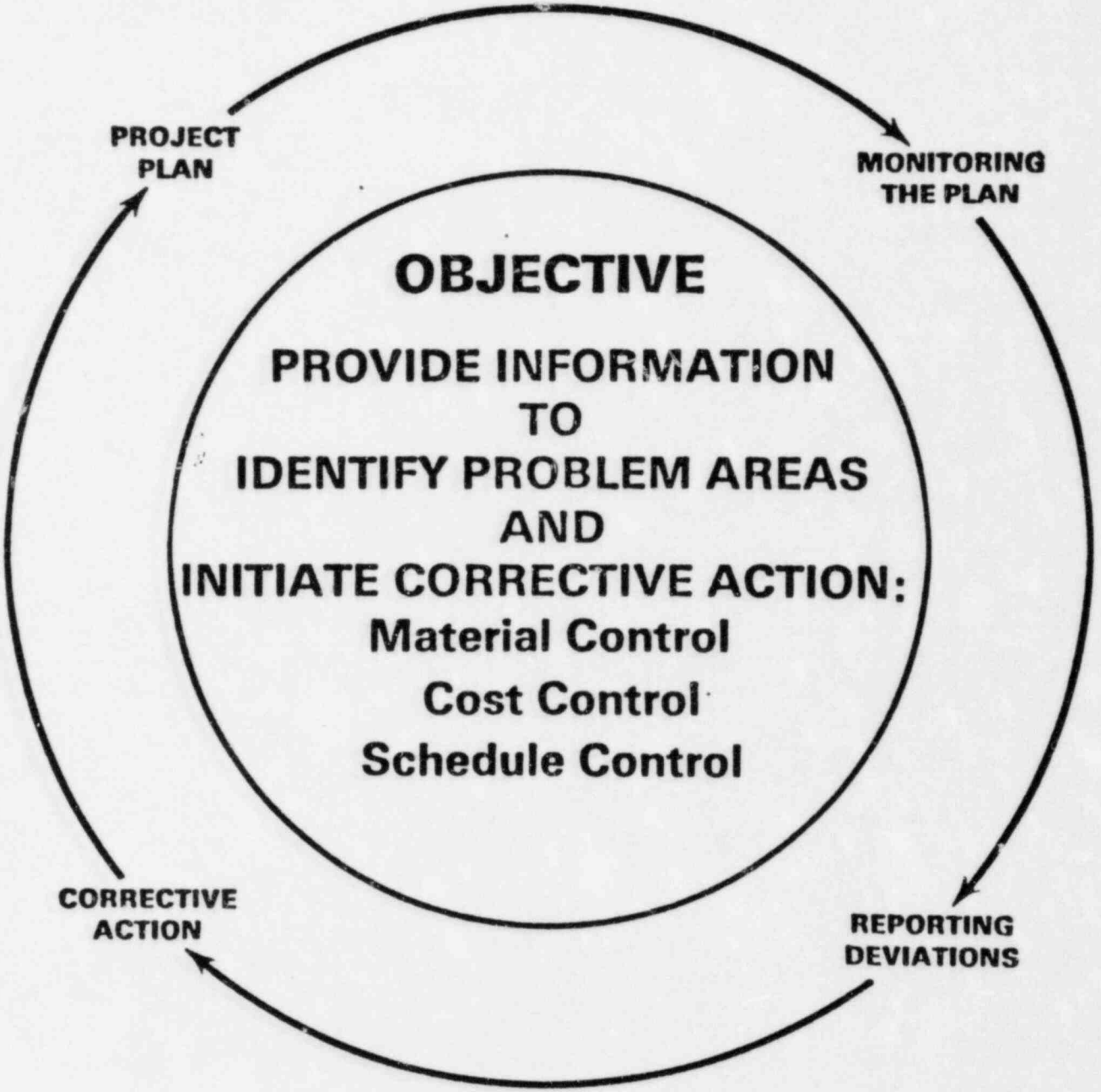
FEATURES OF THE CONTROL SYSTEM

Bechtel's fully integrated project control system is designed to facilitate rapid solution of problems on large projects. Program modules using standardized codes are linked to indicate project actions and their impact on cost/schedule and resources. Automation may be provided by a state-of-the-art management software system for the material, scheduling, and cost processing. Visibility may be provided graphically to display project objectives in tabular or plotted form or on a CRT terminal. The scheduling system has the capability to distribute resources (quantity/manhours) over the work activities and to redistribute remaining resources (using Bechtel's historical experience) over these activities as progress is reported. This feature provides quick assessment of time and resource status and the depicting of "what-if" scenarios as rapidly as possible. Data for historical comparison can be utilized to provide management with quick access to historical reference points so that they can more rapidly evaluate the condition of the project from a non-project perspective.

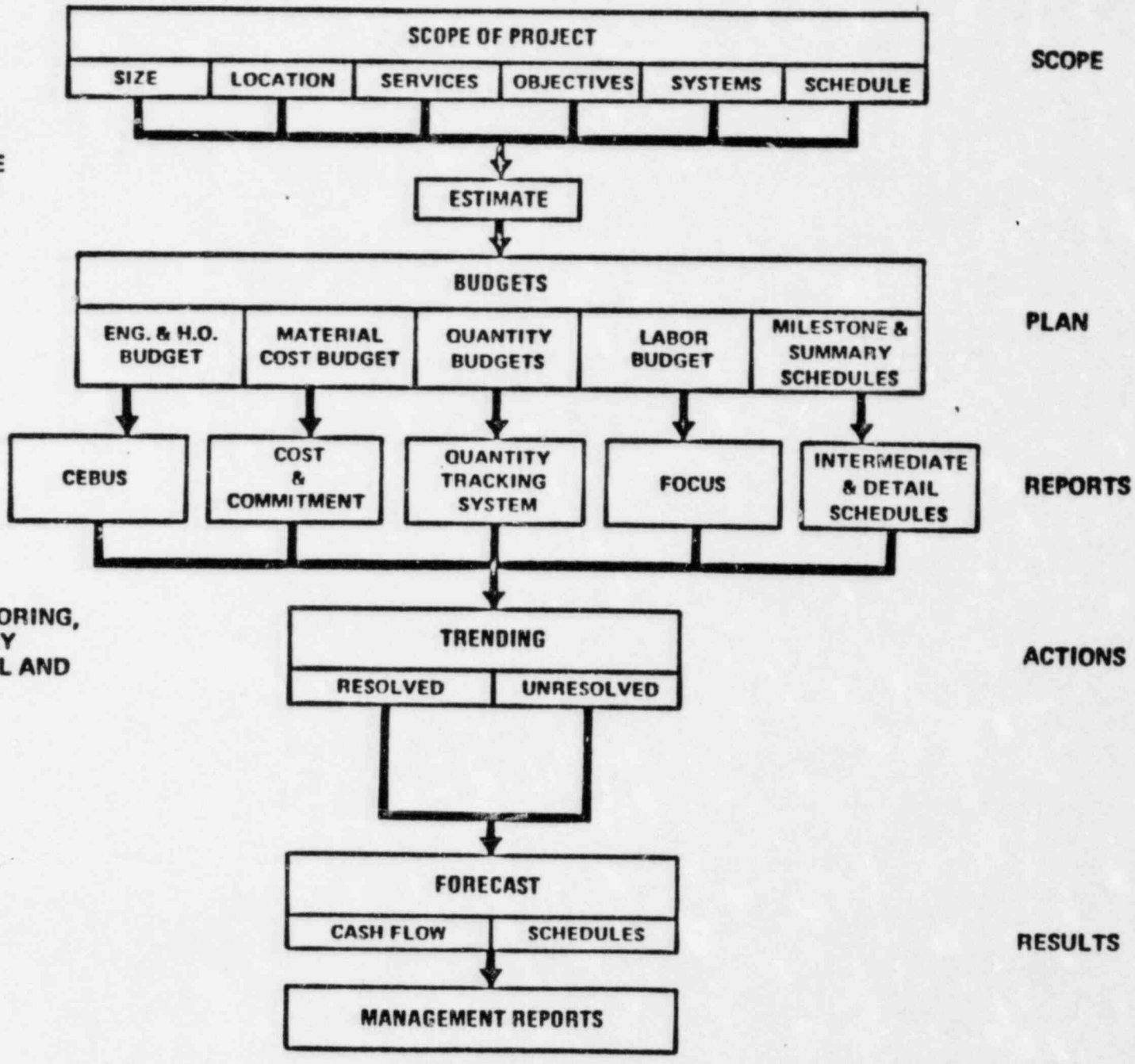
Another part of the project control system is an integrated cost system that can provide quantity, manhour, and cost status, measure this status against the project plan, and report at any level of detail a comprehensive comparison to the plan and/or historical data.

This system provides the client with access to project data in essentially the same manner that it is provided to Bechtel project and division management, enabling mutual participation in project decisions with complete awareness of project status.

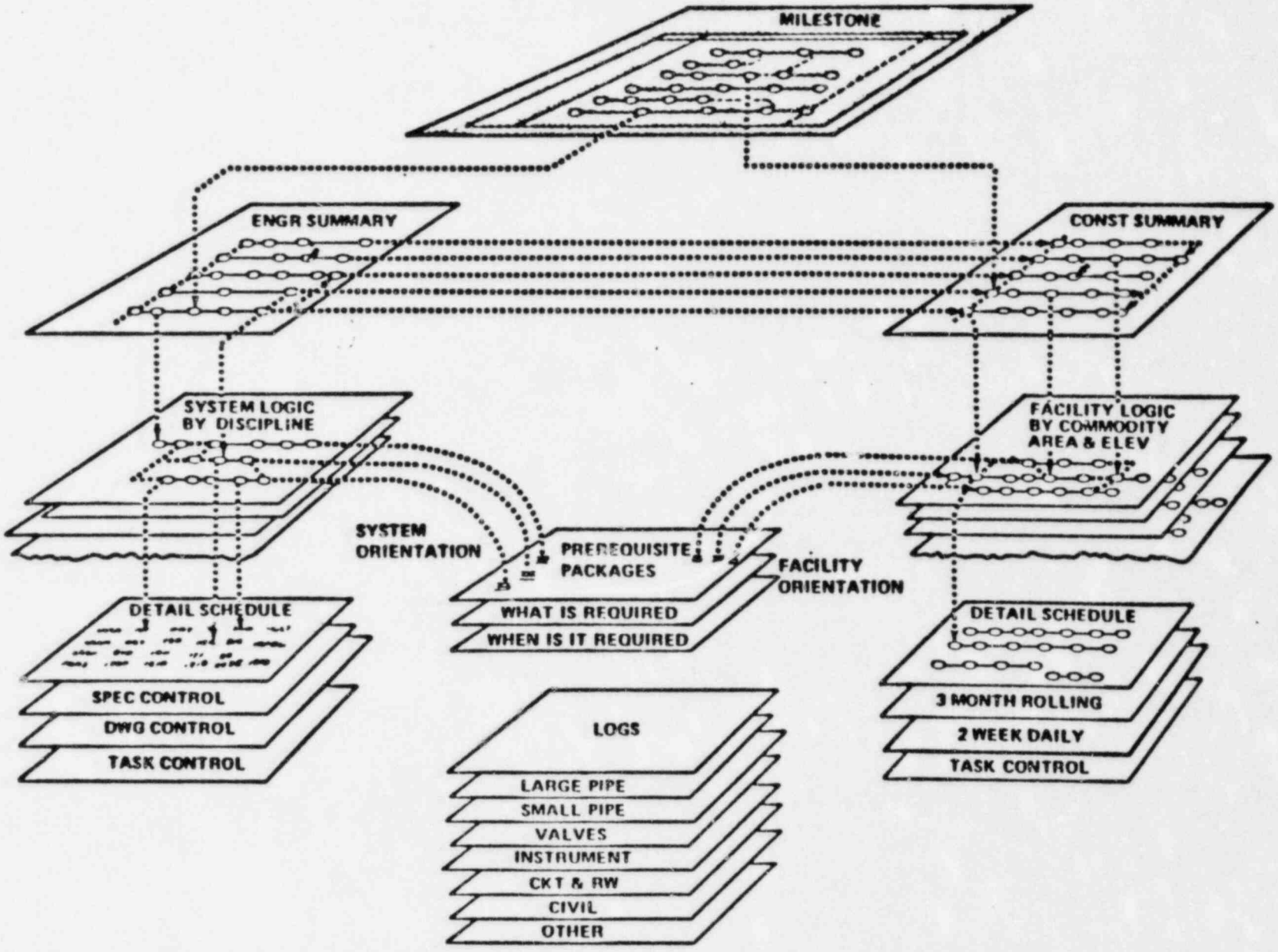
ELEMENTS OF PROJECT CONTROL



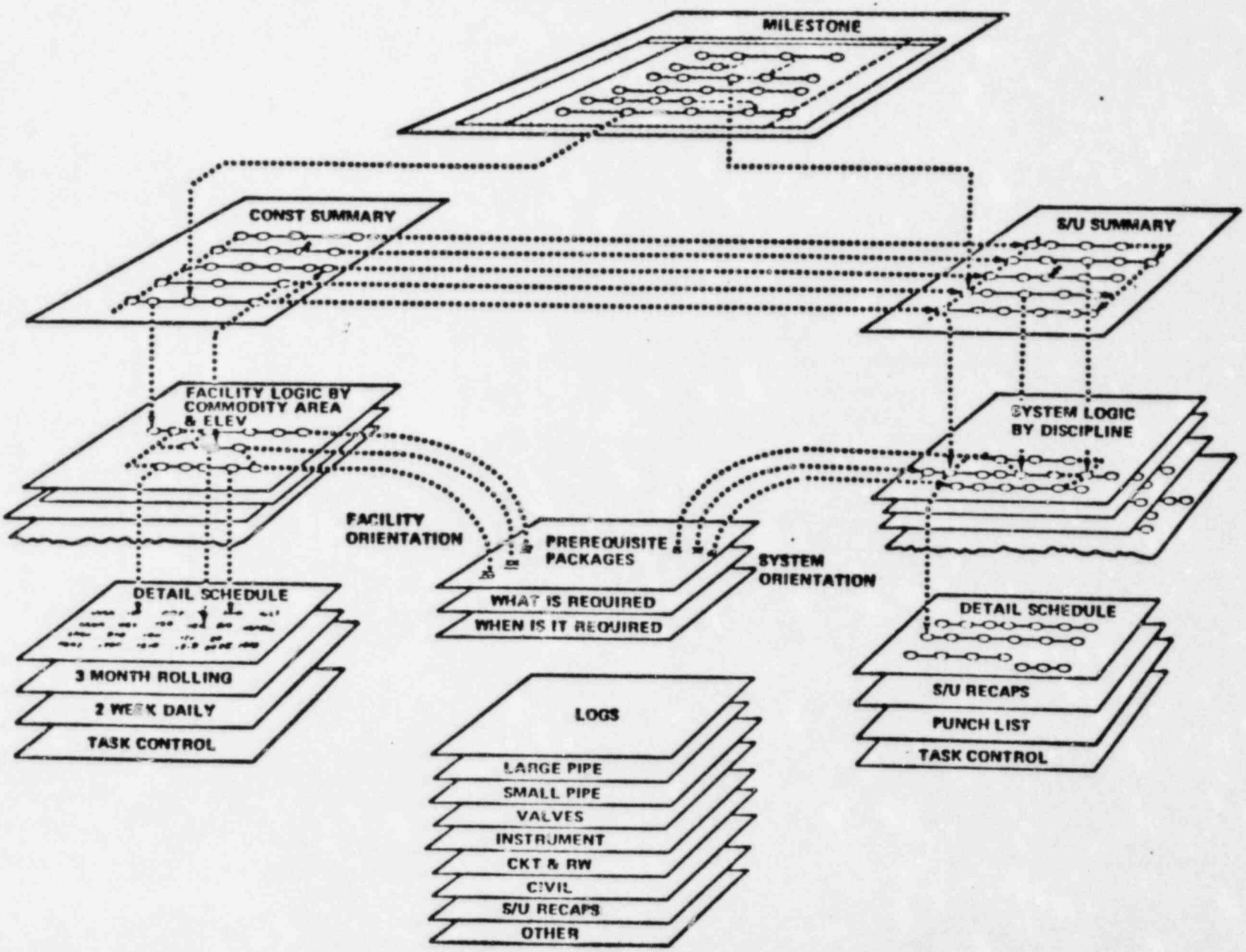
THE CONTROL CYCLE


SCOPE OF PROJECT
SIZE
LOCATION
SERVICES
OBJECTIVES
SYSTEMS
SCHEDULE
SCOPE
ORDER OF MAGNITUDE
PRELIMINARY
DEFINITIVE
ESTIMATE
BUDGETS
ENG. & H.O. BUDGET
MATERIAL COST BUDGET
QUANTITY BUDGETS
LABOR BUDGET
MILESTONE & SUMMARY SCHEDULES
PLAN
CONTINUOUS MONITORING & REPORTING
CEBUS
COST & COMMITMENT
QUANTITY TRACKING SYSTEM
FOCUS
INTERMEDIATE & DETAIL SCHEDULES
REPORTS
CONSOLIDATED MONITORING, REPORTS AND MONTHLY REVIEWS WITH BECHTEL AND OWNER MANAGEMENT
TRENDING
RESOLVED
UNRESOLVED
ACTIONS
QUARTERLY REPORTS
FORECAST
CASH FLOW
SCHEDULES
RESULTS
OWNER & BECHTEL
MANAGEMENT REPORTS

CONSTRUCTION-ENGINEERING INTERFACE



CONSTRUCTION-STARTUP INTERFACE

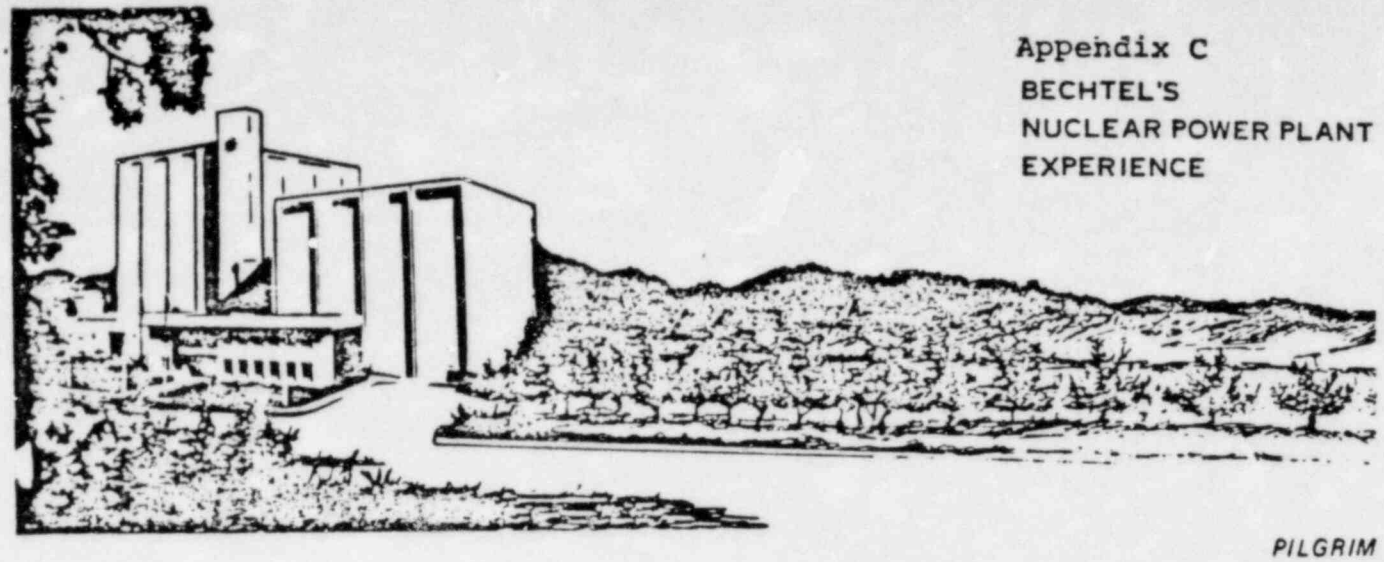


Operating Plant Services

Bechtel's Operating Plant Services Organization provides a complete range of services for operating nuclear plants.

Typical services which have recently been provided at more than 25 operating nuclear units include the following:

- Plant Inspections and Walkdowns
- Support for NRC Bulletins
- Engineering Studies and Consultation
- Capital Improvements and Expansions
- Licensing Support
- Emergency Response Services
- Outage Management
- Plant Maintenance
- Instrument Calibrations
- Circuit Verification
- Performance Testing
- Preventive Maintenance
- Spare Parts Program
- Operating Procedures and Training
- System As-Builts
- Records Management
- Craft Labor Services
- Vendor Shop Quality Surveillance

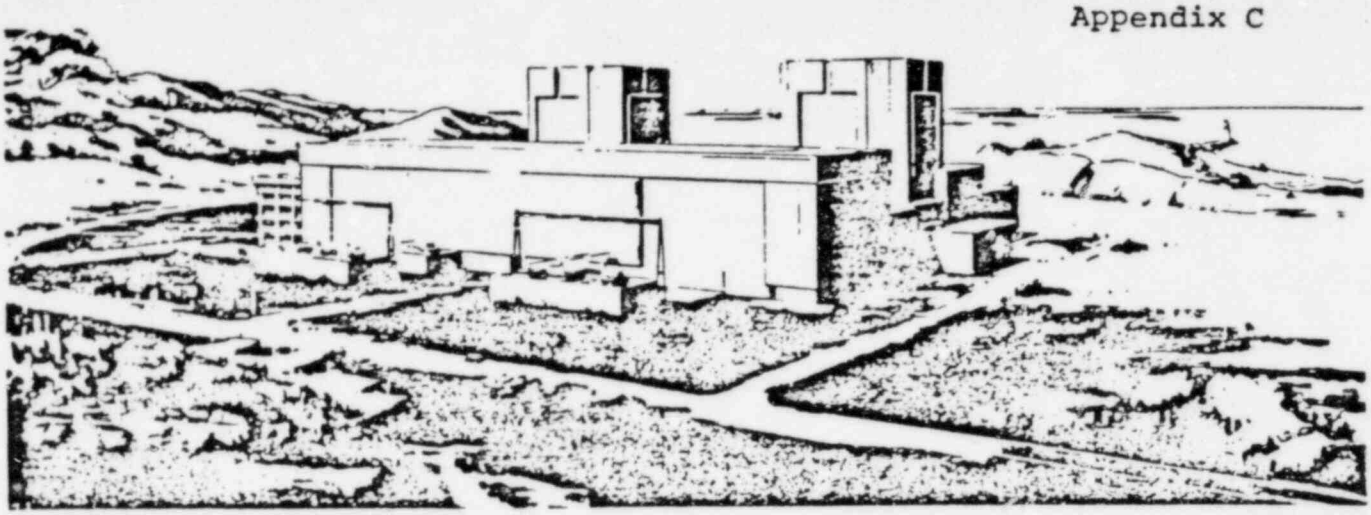


Appendix C
BECHTEL'S NUCLEAR POWER PLANT EXPERIENCE

PILGRIM

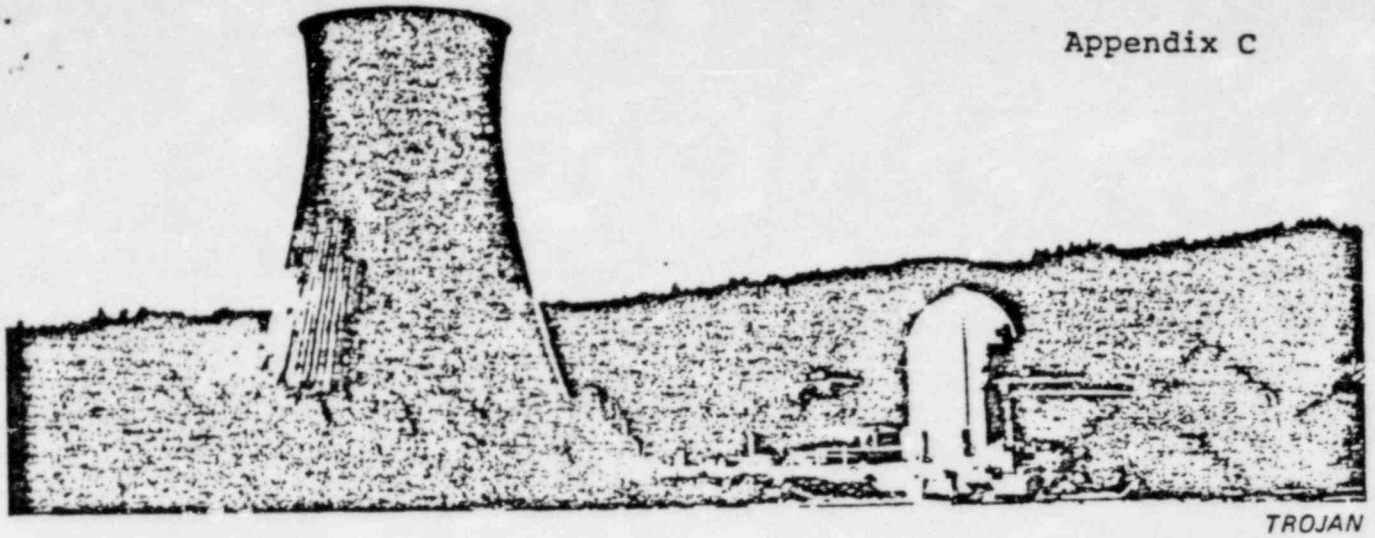
Commercial Operation Date-Unit	Client	Location	Reactor Supplier & Type	Gross MW	Bechtel Scope	Start Engineering	Start Construction
1988							
Sayago	Iberduero, S. A.	Spain	Westinghouse PWR	1100	ME	1975	1977
1987							
Korea Nuclear 8	Korea Electric Co.	Korea	Westinghouse PWR	950	EPMC	1979	1980
Taiwan 7	Taipower	Taiwan	–	–	Prelim E	1979	–
Taiwan 8	Taipower	Taiwan	–	–	Prelim E	1979	–
Hope Creek 2	New Jersey Public Service E & G	New Jersey	GE – BWR	1100	EPC	1974	1974
Callaway 2	Union Electric	Missouri	Westinghouse PWR	1150	EP	1973	1976
Pilgrim 2	Boston Edison	Mass.	CE – PWR	1223	EPC	1972	1980
Vogtle 2	Georgia Power Southern Services	Georgia	Westinghouse PWR	1100	EP	1971	1974
1986							
Korea Nuclear 7	Korea Electric Co.	Korea	Westinghouse PWR	950	EPMC	1979	1980
Tsuruga	Mitsubishi	Japan	Mitsubishi/ Westinghouse PWR	1100	E	1977	1980
Vandellos II	ENHER	Spain	Westinghouse PWR	1100	ME	1976	1977
Palo Verde 3	Arizona Public Service	Arizona	CE – PWR	1300	EPC	1975	1976
Washington Nuclear Power 4	WPPSS	Washington	B & W/W PWR	1218	MC	1972	1973
1985							
Korea Nuclear 6	Korea Electric Co.	Korea	Westinghouse PWR	950	EPMC	1978	1980
Hope Creek 1	New Jersey Public Service E & G	New Jersey	GE – BWR	1100	EPC	1974	1974
Enel V	Electronucleare Italiana	Italy	Westinghouse PWR	950	MEC	1974	Delayed
Washington Nuclear Power	Washington Public Power Supply System	Washington	B & W/W PWR	1218	MC	1972	1973
Grand Gulf Nuclear 2	Mississippi Power and Light	Mississippi	GE – BWR	1301	EPC	1971	1974
Limerick 2	Philadelphia Electric	Pennsylvania	GE – BWR	1088	EPC	1969	1974

E – ENGINEERING P – PROCUREMENT C – CONSTRUCTION M – MANAGEMENT



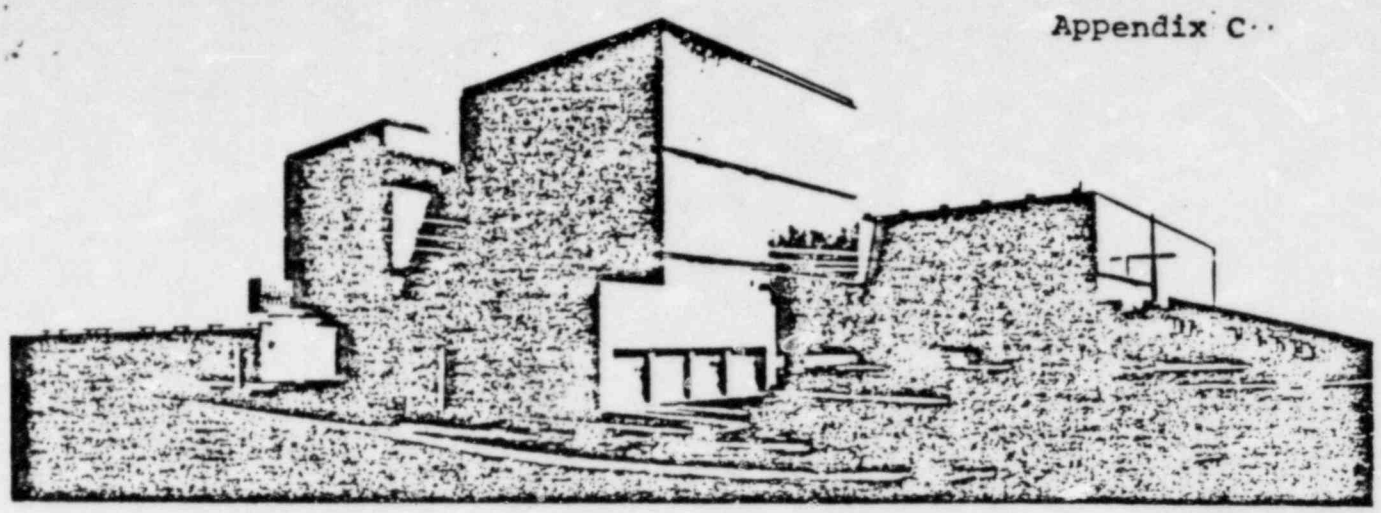
KUOSHENG

Commercial Operation Date-Unit	Client	Location	Reactor Supplier & Type	Gross MW	Bechtel Scope	Start Engineering	Start Construction
1984							
Korea Nuclear 5	Korea Electric Co.	Korea	Westinghouse PWR	950	EPMC	1978	1980
Maanshan 2	Taiwan Power	Taiwan	Westinghouse PWR	950	EPMC	1976	1978
Palo Verde 2	Arizona Public Service	Arizona	CE – PWR	1300	EPC	1973	1976
Skagit Nuclear 1	Puget Sound Power and Light	Washington	GE – BWR	1300	EPMC	1973	Delayed
Vogtle 1	Georgia Power Southern Services	Georgia	Westinghouse PWR	1100	EP	1971	1974
Midland 1	Consumers Power	Michigan	B & W PWR	460	EPC	1968	1972
1983							
Maanshan 1	Taiwan Power	Taiwan	Westinghouse PWR	950	EPMC	1976	1978
Wolf Creek	Kansas City P & L	Missouri	Westinghouse PWR	1150	EP	1973	1977
ASCO 2	FECSA	Spain	Westinghouse PWR	930	ECM	1973	1974
Palo Verde 1	Arizona Public Service	Arizona	CE – PWR	1300	EPC	1973	1976
Pebble Springs 1	Portland General Electric	Oregon	B & W PWR	1260	EMC	1972	Delayed
Lemoniz 2	Iberduero	Spain	Westinghouse PWR	930	E	1972	1974
Susquehanna 2	Pennsylvania Power & Light	Pennsylvania	GE – BWR	1095	EPC	1970	1974
Limerick 1	Philadelphia Electric	Pennsylvania	GE – BWR	1088	EPC	1969	1974
Midland 2	Consumers Power	Michigan	B & W PWR	812	EPC	1968	1972
1982							
Callaway 1	Union Electric	Missouri	Westinghouse PWR	1150	EP	1973	1976
Kuosheng 2	Taiwan Power	Taiwan	GE – BWR	1000	EPMC	1972	1975
Grand Gulf Nuclear 1	Mississippi Power and Light	Mississippi	GE – BWR	1301	EPC	1971	1974
Susquehanna 1	Pennsylvania Power & Light	Pennsylvania	GE – BWR	1095	EPC	1970	1974



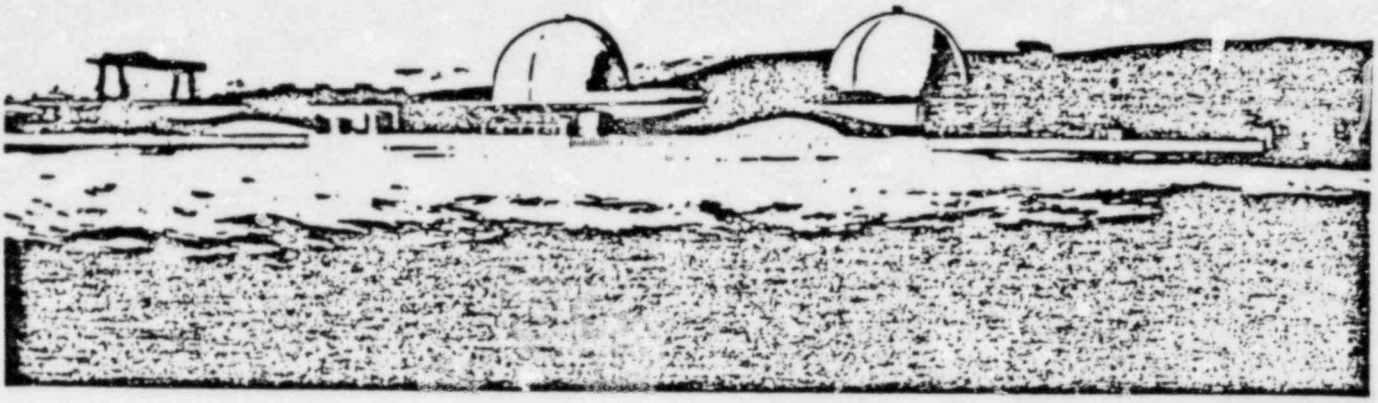
TROJAN

Commercial Operation Date-Unit	Client	Location	Reactor Supplier & Type	Gross MW	Bechtel Scope	Start Engineering	Start Construction
1981							
Kuosheng 1	Taiwan Power	Taiwan	GE – BWR	1000	EPMC	1972	1975
Lemoniz 1	Iberduero	Spain	Westinghouse PWR	930	E	1972	1974
ASCO 1	FECSA	Spain	Westinghouse PWR	930	ECM	1972	1974
San Onofre 2	Southern California Edison	California	Comb. Eng. PWR	1100	EPC	1970	1974
1980							
Arkansas Nuclear 1 Unit 2	Arkansas Power & Light	Arkansas	Comb. Eng. PWR	930	EPC	1970	1972
Joseph M. Farley 2	Alabama Power & Southern Service	Alabama	Westinghouse PWR	847	E	1970	1972
FFTF	WADCO for USAEC	Washington	Westinghouse LMFBR	400	EPC	1968	1970
1979							
E. I. Hatch 2	Georgia Power & Southern Service	Georgia	GE – BWR	822	E	1970	1971
Forsmark	ASEA-ATOM	Sweden	ASEA-ATOM BWR	900	Advisory	1970	1973
1977							
Joseph M. Farley 1	Alabama Power & Southern Service	Alabama	Westinghouse PWR	847	E	1969	1972
Davis-Besse 1	Toledo-Edison Cleveland Electric	Ohio	B & W PWR	906	EMC	1969	1971
Calvert Cliffs 2	Baltimore Gas & Electric	Maryland	Comb. Eng. PWR	88[illegible]	EPC	1967	1969
1975							
Trojan 1	Portland Gen. Electric	Oregon	Westinghouse PWR	1150	EMC	1968	1971
Milestone Nuclear 2	Connecticut Light & Power Co. Hartford Electric Light Company West Massachusetts Electric Company	Connecticut	Comb. Eng. PWR	857	EPC	1968	1970



POINT BEACH

Commercial Operation Date-Unit	Client	Location	Reactor Supplier & Type	Gross MW	Bechtel Scope	Start Engineering	Start Construction
1975							
E. I. Hatch 1	Georgia Power & Southern Service	Georgia	GE – BWR	813	E	1967	1969
Calvert Cliffs 1	Baltimore Gas & Electric	Maryland	Comb. Eng. PWR	884	EPC	1967	1969
Rancho Seco	Sacramento Municipal Utility District	California	B & W PWR	950	EPMC	1967	1968
1974							
Duane Arnold	Iowa Light & Power Co.	Iowa	GE – BWR	588	EPC		1970
Arkansas Nuclear 1 Unit 1	Arkansas Power & Light	Arkansas	B & W PWR	904	EPC		1968
Oconee 2	Duke Power Co.	So. Carolina	B & W PWR	900	E	1966	1967
Oconee 3	Duke Power Co.	So. Carolina	B & W PWR	900	E	1966	1967
Peach Bottom 2	Philadelphia Electric	Pennsylvania	GE – BWR	1108	EPC	1966	1967
Peach Bottom 3	Philadelphia Electric	Pennsylvania	GE – BWR	1108	EPC	1966	1967
1973							
Point Beach 2	Westinghouse for Wis.-Mich. Power Co.	Wisconsin	Westinghouse PWR	490	EPC	1967	1968
Oconee 1	Duke Power Co.	So. Carolina	B & W PWR	900	E	1966	1966
Turkey Point 4	Flordia Power & Light	Florida	Westinghouse PWR	724	EPC	1965	1967
1972							
Pilgrim 1	Boston Edison	Mass.	GE – BWR	655	EPC	1967	1968
Turkey Point 3	Florida Power & Light	Florida	Westinghouse PWR	724	EPC	1965	1967
1971							
Monticello	General Electric for No. State Power Co.	Minnesota	GE – BWR	545	EPC	1966	1967
Palisades 1	Consumers Power	Michigan	Comb Eng. PWR	815	EPC	1966	1967



SAN ONOFRE

Commercial Operation Date-Unit	Client	Location	Reactor Supplier & Type	Gross MW	Bechtel Scope	Start Engineering	Start Construction
1970							
Point Beach 1	Westinghouse for Wis.-Mich. Power Co.	Wisconsin	Westinghouse PWR	490	EPC	1966	1967
Ginna 1	Westinghouse for Roch. Gas & Electric	New York	Westinghouse PWR	470	PC	1965	1966
1969							
Tarapur 1	IGE for Indian AEC	India	GE – BWR	190	EPC	1964	1964
Tarapur 2	IGE for Indian AEC	India	GE – BWR	190	EPC	1964	1964
1968							
San Onofre 1	Southern California Edison San Diego Gas & Electric	California	Westinghouse PWR	450	EPC	1963	1964
1967							
Peach Bottom 1	Philadelphia Electric	Pennsylvania	GA – HTR	46	EPC	1958	1962
1963							
Humboldt Bay 3	Pacific Gas & Electric	California	GE – BWR	69	EPC	1958	1960
VESR	General Electric – ESADA	California	GE – Steam Superheater	0	C	–	1961
1962							
Big Rock Point	Consumers Power	Michigan	GE – BWR	75	EPC	1959	1960
NPD	Canadian General Electric for AECL	Canada	CGE – PHWR	20	PC	–	1959
Hallam	Atomic Energy Commission	Nebraska	Al – SGR	76	EC	1958	1959
1960							
Dresden 1	General Electric for Commonwealth Edison	Illinois	GE – BWR	210	EPC	1955	1957
1957							
VBWR	General Electric	California	GE – BWR	5	EPC	1955	1956
APPR-1A	ALCO	Alaska	ALCO – PWR	2	E	1954	1955
1955							
West Milton	General Electric	New York	GE – SIR	10	EC	1952	1953
1952							
EBR-1	Atomic Energy Commission	Idaho	ANL-LMFBR	0.2	M	–	1949

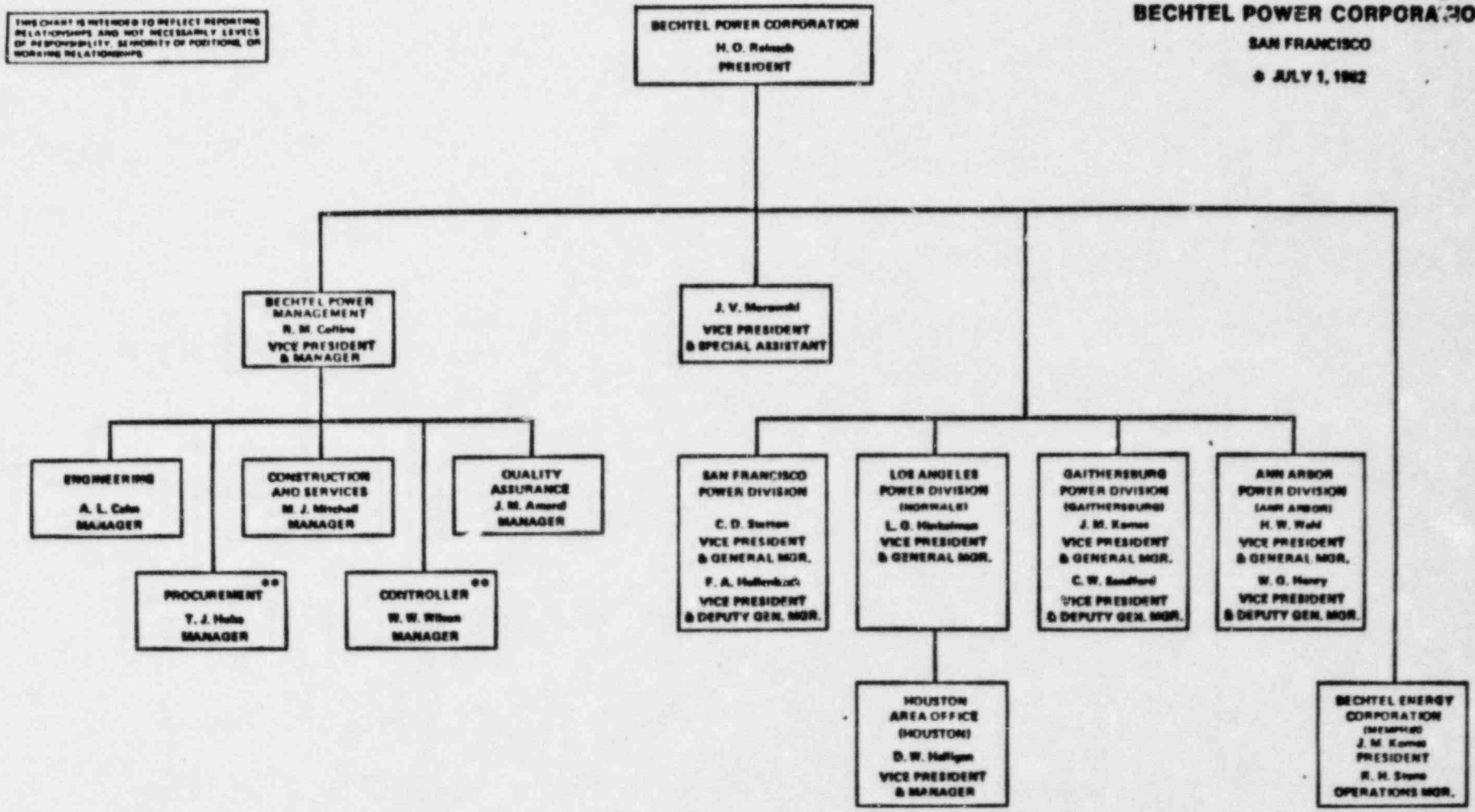
E – ENGINEERING P – PROCUREMENT C – CONSTRUCTION M – MANAGEMENT

BECHTEL POWER CORPORATION

SAN FRANCISCO

* JULY 1, 1982

THIS CHART IS INTENDED TO REFLECT REPORTING RELATIONSHIPS AND NOT NECESSARILY LEVELS OF RESPONSIBILITY, SENIORITY OF POSITIONS, OR WORKING RELATIONSHIPS



NOTE:
ALL PERSONNEL BASED IN HOME OFFICE UNLESS OTHERWISE INDICATED

** RECEIVES FUNCTIONAL GUIDANCE FROM THE APPLICABLE SAN FRANCISCO SERVICE ORGANIZATION

* REPLACES CHART DATED FEBRUARY 22, 1982

11/23/82

Appendix C

Demonstration of Independence

In the meeting of November 17, 1982, between Cincinnati Gas and Electric (CG&E), the Nuclear Regulatory Commission (NRC), and Bechtel, the NRC requested that Bechtel demonstrate its independence from CG&E and the Zimmer project utilizing the criteria established for the design verification program for Diablo Canyon.

The criteria to test the independence of the proposed companies for Diablo Canyon were listed in Chairman Palladino's response to Congressmen Dingell and Ottinger dated February 1, 1982. The most important consideration is the technical competence of the companies or individuals involved. Further, these parties were not to have had any direct previous involvement with the activities at Diablo Canyon that they were to review. In addition, five factors would be considered in evaluating their independence. These factors as appropriate to CG&E and the Zimmer project are as follows:

1. Whether the individuals or company had been previously hired by CG&E to do similar work;

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

3. Whether the individual owns or controls significant amounts of CG&E stock;

4. Whether members of the present household of individuals involved are employed by CG&E; and

5. Whether any relatives are employed by CG&E in a management capacity.

Neither Bechtel Power Corporation nor any of the individuals directly involved in the Independent Review of the Management of the Zimmer Nuclear Project (see Appendix B)

- have been previously involved in the Zimmer project
- have been previously hired by CG&E to do similar work
- have been previously employed by CG&E
- own or control significant amounts of CG&E stock
- have present household members employed by CG&E
- have relatives employed by CG&E in a management capacity

In 1977-78 Bechtel performed a steam system evaluation study for Dayton Power and Light, one of the owners of the Zimmer Project.

In 1977-79 Bechtel performed a study of replicating four existing power plants for American Electric Power, one of the owners of the Zimmer Project.