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APPENDICES

GLOSSARY

AS-CONSTRUCTED:

The status of construction of safety-related systems, structures, and components as currently constructed

CONTRACTOR:

Any person or entity which has agreed by written undertaking with the Owners to furnish labor services only or a combination of materials, equipment, and/or goods and labor services for the Wm. H. Zimmer Nuclear Power Station (Zimmer); provided, however, that the term "Contractor" does not include Bechtel, Architect/Engineer, Constructor, or the suppliers of the turbine generator or NSSS

CONSTRUCTOR:

Bechtel Power Corporation or any other entity selected as prime contractor to perform construction services for the Wm. H. Zimmer Nuclear Power Station (Zimmer)

CORPORATE MANAGEMENT: Management personnel responsible for the overall management of a corporation or firm

PROJECT MANAGEMENT: Management personnel directly assigned to manage the Zimmer Project

CRITERIA IX: 10 CFR 50, Appendix B, Control of Special Processes, including welding, heat treating, and nondestructive testing

PROJECT DATA BASE:

The system(s) which provides for storage, retrieval, compilation and utilization of data such as tracking labor hours, material quantities, design documents, and deficiency document status

GLOSSARY (Continued)

SAFETY-RELATED:	Those SSCs necessary to ensure 1) the integrity of the reactor coolant pressure boundary, 2) the capability to shut down the reactor and maintain it in a safe shutdown condition, or 3) the capability to prevent or mitigate the consequences of accidents that could result in potential offsite exposures comparable to those referred to in 10 CFR 100.11. As used in this CCP document, the term "safety-related" includes those SSCs that are not safety-related, but which have been designed as Seismic Category I or which are subject to FSAR commitments which expand the scope of the QA Program (e.g., Fire Protection)
NONSAFETY-RELATED:	Not falling within the definition of safety-related
TURNOVER:	Transferring control of a system from construction to the CG&E startup group
WORK-TO-GO LIST:	A list identifying design and/or construction work yet to be completed

LIST OF ACRONYMS

AFR Audit Finding Report
AI Authorized Inspector
ANI Authorized Nuclear Inspector
ANSI American National Standards Institute
ASME American Society of Mechanical Engineers
AVL Approved Vendor List
BPM Bechtel Procedures Manual
BWR Boiling Water Reactor
CAR Corrective Action Request
CCP Continuation of Construction Plan
CDDS Construction Document Distribution Schedule
CG&E Cincinnati Gas & Electric
COA Course of Action
C&SO Columbus & Southern Ohio Electric Company
DCP Design Change Package
DDB Deficiency Data Base
DDCN Design Document Change Notification
DOR Division of Responsibilities
DP&L Dayton Power & Light
EOTD Electric Operating Test Division
EVP Evaluation Verification Package
FDDR Field Deviation Disposition Request
FDI Field Disposition Instruction
FSAR Final Safety Analysis Report
GE General Electric Co.
HJK Henry J. Kaiser Co.
MCAR Management Corrective Action Report

LIST OF ACRONYMS (Continued)

NCR Nonconformance Report (Issued under the nonconformance program described in Appendix H of the PVQC)

NDE Nondestructive Examination

NET NRC Evaluation Team

NR Nonconformance Report (Issued prior to implementation of the nonconformance program described in appendix H of the PVQC)

NRC U.S. Nuclear Regulatory Commission

NQAM Nuclear Quality Assurance Manual

NSSS Nuclear Steam Supply System

PCR Project Change Request

PDB Project Data Base

PDL Project Documents List

PMDS Project Master Distribution Schedule

PQAM Project Quality Assurance Manual

PVQC Plan to Verify the Quality of Construction

QA Quality Assurance

QAM Quality Assurance Manual

QC Quality Control

QCIR Quality Control Inspection Report

QCP Quality Confirmation Program

QVIR Quality Verification Inspection Report

SCO "Order to Show Cause and Order Immediately Suspending Construction" or Show Cause Order

S&L Sargent & Lundy Engineers

SSC System, Structure, or Component

TPT Torrey Pines Technology (a Division of GA Technologies, Inc.)

ZOC Zimmer Oversight Committee

ZPM Zimmer Procedures Manual

LIST OF APPENDICIES

<u>Appendix Number</u>	<u>Title</u>
1	Division of Responsibilities
2	Zimmer Integrated Project Organization for PVQC and CCP
3	CG&E Organization for the Zimmer Project
4	Bechtel Project Management Organization
5	Bechtel Construction Organization
6	CCP System Team Organization
7	Flow Sheet for Start of CCP Safety- Related Work
8	QA Program and Procedural Document Relationship Hierarchy
9	Flow of Documents and Records for CCP
10	Description of Project Nonconformance Procedure
11	Major Design Change Control
12	Procurement and Material Control
13	Construction Procedures
14	Work Package Preparation
15	Implementation of CCP Safety-Related Work

1.0 OVERVIEW OF CONTINUATION OF
CONSTRUCTION PLAN (CCP)

1.1 BACKGROUND

On November 12, 1982, the Nuclear Regulatory Commission (NRC) issued an "Order to Show Cause and Order Immediately Suspending Construction", Show Cause Order (SCO), regarding the Wm. H. Zimmer Nuclear Power Station (Zimmer). The SCO directed the licensee, Cincinnati Gas & Electric Co. (CG&E), to immediately suspend further safety-related construction activities.

The SCO stated that safety-related construction could not recommence until CG&E had completed four specific actions. Three of the required actions have been completed. They are:

- o The independent review of Zimmer Project Management.
- o Submittal to the NRC of a recommended Course of Action (COA).
- o Submittal of a comprehensive Plan to Verify the Quality of Construction (PVQC).

The fourth action requires CG&E, as licensee, to submit a comprehensive Continuation of Construction Plan (CCP) before restarting safety-related construction activities. The CCP reflects significant steps already taken by CG&E in staffing and planning for the construction restart with its strengthened project organization. As part of this strengthening, CG&E has retained Bechtel Power Corporation (Bechtel) as the Project Director and Constructor. Bechtel is responsible, under CG&E direction, for managing the continuation of construction and other work as assigned.

The Zimmer team, under the direction of CC&E Project Management, is proceeding to modify existing programs, install new programs, review and modify existing procedures, and prepare new procedures as required. A restructuring of the Quality Assurance/Quality Control (QA/QC) Programs for all contractors is also underway, thereby providing the foundation for implementation of the CCP.

The Independent Auditor of the PVQC will also audit the QA/QC aspects of the CCP such that all QA/QC activities through completion of the plant are subject to independent audit. The "Protocol Governing Communications Between CG&E and Independent Organizations Conducting Reviews or Audits Under the

Commission's Order," as prescribed by the NRC, will be utilized to ensure an "arm's length" relationship between CG&E, Bechtel and the Independent Auditor.

The following sections describe the major elements of the CCP and describe how these elements are integrated to achieve an efficient, controlled process to complete construction of Zimmer.

1.2 PURPOSE AND SCOPE

The Continuation of Construction Plan (CCP) provides a program to complete the remaining work at Zimmer, including correction of nonconforming conditions on safety-related systems, structures, and components (SSCs), in accordance with appropriate regulations and in a controlled manner.

1.3 DESCRIPTION OF CCP

The CCP is a comprehensive program designed to assemble the management organization and systems required to control completion of Zimmer construction and plant system turnover to CG&E. The plan provides for a team consisting of CG&E as Project Manager (licensee), Bechtel as Project Director and Constructor, Sargent & Lundy (S&L) as Architect/Engineer, and General Electric (GE) as the Nuclear

Steam Supply System (NSSS) designer and fabricator. The members of the team have defined responsibilities and will use approved work plans and procedures to control work processes. The work plans and procedures emphasize quality and control and are based on proven methods which have been used by other owners and Bechtel on other power plants.

Bechtel, as Project Director and Constructor, will manage the completion of the project using competent and experienced management at all levels and provide the overall program within which S&L, GE, and contractors will complete their respective functions.

The CCP is specifically structured to provide a strong management and technical foundation for the completion of the engineering, procurement, and construction activities at Zimmer.

Fundamentally, the CCP is a two-phase program consisting of a preparatory stage in which the prerequisite programs are developed and an implementation phase during which actual construction is undertaken in accordance with the prerequisite programs and appropriate Nuclear Regulatory Commission (NRC) approvals.

1.3.1 Major Elements Of CCP/Correction Of Programmatic Problems

In order to achieve the control and correction of programmatic problems necessary to complete engineering, procurement, construction, and testing in accordance with the applicable regulations and the NRC construction permit, it is essential that key elements of the CCP be in place prior to continuation of construction. The following paragraphs summarize the major elements of the CCP that CG&E and Bechtel will implement, as required, prior to continuing construction.

o ORGANIZATION

CG&E has established a restructured and markedly strengthened management team consisting of a highly experienced and motivated senior management staff dedicated to quality in the construction, startup, maintenance, and operation of a safe and reliable nuclear power facility. As part of the restructuring, CG&E has provided a clearer definition of the responsibilities and interfaces of all organizations. CG&E has more than doubled its staff to support this augmented management organization, has engaged the services of Bechtel to act as the Project Director and Constructor reporting directly

to CG&E senior management, and has engaged the services of a firm not previously associated with Zimmer activities to independently audit the PVQC and QA/QC activities of the CCP.

Retention of Bechtel as the Project Director and Constructor adds to the project an experienced constructor and architect/engineer to manage, as directed by CG&E, the engineering and construction activities. Bechtel has designed and constructed numerous nuclear plants and has assumed the role of Project Director and/or Constructor on other plants after the projects were partially completed. As Project Director, Bechtel is responsible for QA/QC surveillance of S&L, GE, and contractors; for project controls such as planning, scheduling, and cost control; and for providing project direction to S&L, GE, and contractor organizations.

As Constructor, Bechtel is directly responsible for the accomplishment of the remaining construction as assigned by CG&E.

Henry J. Kaiser Company's (HJK) role as the former Constructor is limited to those activities necessary to provide the data required to certify the status of the ASME, Section III, systems, structures, and components (SSC) for which HJK has code

responsibility. This activity will be performed as described in the PVQC and in accordance with detailed agreement for the transfer of code responsibilities.

S&L has substantially increased the number of its resident engineers at Zimmer. Necessary organizational changes with appropriate assignment of responsibilities will enable S&L to maintain greater control over design changes initiated in the field, provide more effective resolution of nonconformances, and provide more effective guidance for construction.

o PROCEDURES

A Zimmer Procedures Manual is being prepared which addresses all interface activities involving more than one department or organization. A comprehensive set of procedures is being prepared and will be used to integrate, coordinate, and control the activities of all organizations. Each organization is preparing procedures which will conform to the requirements of the Zimmer Procedures Manual. Each contractor, in addition to administrative procedures, will establish procedures to control work processes. These procedures will reflect Bechtel's role as Project Director and Constructor.

S&L's, GE's, and contractors' Zimmer quality-related procedures will be reviewed and approved by Bechtel.

The consolidation of the project procedures and instructions will enable management to maintain the work controls essential to completing Zimmer in a deliberate and controlled manner.

o PROJECT CONTROL SYSTEMS

As Project Director, Bechtel is establishing and will maintain a complete Project Control System including plans, schedules, budgets, manpower requirements, cost control, and finance and accounting. The Project Control System is supported by a Project Data Base.

As Project Director, Bechtel will also prepare and issue reports to management including monthly progress reports, project trend reports, QA management reports, and cost and schedule forecasts. These reports will keep all levels of management informed of status and problems, and they will allow management to take corrective action as required.

o CONSTRUCTION DOCUMENT CONTROL & RECORDS MANAGEMENT

A construction documents and records control system under Bechtel's direction will control drawings, specifications, and other controlled documents and records until turnover of completed SSCs and associated records to CG&E at which time they will be stored in the CG&E records vault. The system will provide the needed support to engineering, procurement, construction, and inspection activities as well as the turnover of required records (completed documents) to the permanent plant records system. Controlled documents such as instructions, specifications, procedures, drawings, and applicable revisions will be controlled and distributed in accordance with the Project Master Distribution Schedule to assure the latest applicable revisions are used.

o TRAINING

A Master Training Plan will be prepared in accordance with the CG&E site directive and approved by CG&E. CCP personnel will be given general orientation and will be trained in the requirements of the procedures and work plans required for the performance of their specific tasks. Each organization will perform

training as defined in the Master Training Plan. In addition to performing assigned training, Bechtel as the Project Director will monitor and approve S&L's, GE's, and contractors' training activities.

o QUALITY PROGRAM

CG&E has responsibility for the overall Quality Program. The QA Program strengthening includes addition of competent, experienced, and qualified QA personnel headed by a new CG&E Assistant Vice President, Quality Assurance; strong management support; effective QA procedures; clear communications with upper-level management; and provisions for ensuring involvement of project management.

The CG&E QA Organization will approve and oversee all site Quality Programs. The QA Programs of CG&E, S&L, GE, and Zimmer contractors performing safety-related work are being reviewed and restructured to assure programmatic adequacy and functional ability to meet requirements. In addition, the independent audit of the PVQC has been expanded to cover the QA/QC aspects of the CCP such that all QA/QC activities through completion of the plant are subject to independent

audit. The QA Programs of S&L, GE, and contractors will be closely monitored by Bechtel.

The QA/QC Programs of all organizations will address general and specific problems previously identified. Quality will be stressed at every level in all organizations. All personnel will be informed that any form of harassment of QA/QC personnel will not be tolerated.

Reports of quality concerns will be prepared and promptly forwarded to CG&E management. Inter-organizational QA Managers meetings and Senior Vice President, Nuclear Operations, meetings will be held on a regular basis.

o CORRECTIVE ACTION PROGRAM

The Project Corrective Action Program assures that audit findings, NRC findings, NCRs, Corrective Action Requests, and programmatic deficiencies are analyzed, tracked, and expedited to assure timely and correct disposition, completion, and closeout. Analyses of these items will be conducted to identify quality trends and to determine whether a generic or programmatic deficiency exists. This information

is used to determine if the levels of inspection/surveillance are adequate. This will help ensure that corrective action, which both corrects the specific deficiencies and prevents recurrence of similar deficiencies, is taken. Trends will be analyzed against historical records to continuously test the effectiveness of the new programs against past performance. Significant conditions adverse to quality will be investigated to identify root causes. This will permit senior management to take measures to avoid recurrence of significant conditions adverse to quality.

o NONCONFORMANCES

The Project Nonconformance Program provides definitive procedures for reporting, processing, controlling, and dispositioning. The system will be centrally controlled and managed by Bechtel. All dispositions and closeouts of nonconformances will be documented using a nonconformance report (NCR) to provide the quality records needed for turnover to plant operations. NCRs will be tracked to ensure timely disposition and corrective action for nonconforming items. Information regarding the status of NCRs will be readily available to the

originators of the documents and a mechanism for the originators to disagree with or appeal the actions being taken will be procedurally described.

o PREVENTION OF HARASSMENT OF QA PERSONNEL

CG&E and Bechtel have issued to all site employees statements of the companies' policies which prohibit harassment and intimidation of QA personnel. The statements also provide formal channels for handling quality concerns and complaints of harassment. A formal project-wide program will be established to further the goals of the policy statements. All Zimmer personnel will be thoroughly indoctrinated concerning the importance of QA on the project and the implications resulting from harassment of QA personnel.

o CONFIGURATION AND DESIGN CHANGE CONTROL

Revisions to safety-related design documents and field-requested design changes will be subject to equivalent reviews and approvals to those for the original design. All approved design change documents will be tracked and controlled through a centralized project system to ensure that affected base design documents are identified.

This process will ensure that design changes are processed and dispositioned in a timely manner.

As the system turnover date approaches, design changes will be packaged to ensure that configuration control is maintained. Field requests for design changes will not be used to bring existing construction into conformance with design. Nonconforming items will be documented on nonconformance reports.

o PROCUREMENT/MATERIAL CONTROL

The Procurement and Material Control Programs and procedures have been strengthened to control requisitioning, purchasing, contracting, expediting, source surveillance and audits, shipping, receipt inspection, storage, and issue of materials and components. The Procurement Program will assure that procurement and material control activities are accomplished in accordance with the applicable regulations and requirements. Particular attention will be placed on activities which affect quality such as inspections, documentation, storage, material control, and traceability of materials.

o WELDING/SPECIAL PROCESSES

The project program for control of welding and special processes has received special attention and upgrading. Existing procedures will be reviewed, retired, revised or new procedures prepared as required to ensure that they correctly address design and code requirements. Bechtel will keep the number of welding procedures to a minimum and keep them up to date and controlled in accordance with the QA Program.

All personnel performing welding or other special processes will be qualified in accordance with the requirements of the ASME Code or Standards applicable to the process prior to performance of the activity. Qualification testing of personnel will be witnessed by QC personnel from the affected organizations to at least the same level as would be required during the production process to assure compliance to the procedures and accuracy of the test documentation and reports.

The Project Data Base will contain the current qualifications of site welding procedures, individual welder qualifications, and personnel training

records. This information will assist in assuring that welds are properly made by qualified welders using correct procedures.

o PILOT PROGRAM

A Pilot Program is being established in which the programs, procedures, and inspection requirements for safety-related work are applied to selected nonsafety-related SSCs. Use of the Pilot Program allows evaluation of processes, programs, and procedures and their modification or development of new procedures as required.

o WORK PACKAGE PROGRAM

Work packages are the primary means of controlling the construction work. Work packages consist of the design drawings, construction inspection plan, instructions, checklists, construction aids, procedures, restrictions, precautions, and other pertinent documents or information required to complete a specific scope of work.

Work packages are planned and prepared using input from PVQC which identifies current status, nonconformances, and incomplete work in safety-related SSCs. Identified rework and new work

resulting from design changes or new design also are inputs to the preparation of work packages. All documents in the work package are kept current in accordance with approved procedures. Procedures for the preparation, updating, and control of work packages are being prepared and the implementation of these procedures is the responsibility of Bechtel. Work packages are assigned to System Teams responsible for monitoring and completing the work.

No work will be conducted without a release from PVQC indicating concurrence that the work will neither interfere with nor preempt the conduct of the PVQC.

o CONSTRUCTION TESTING/TURNOVER

The Project Test Program is being completely reviewed and upgraded. Test specifications and construction testing procedures are being reviewed and modified as necessary. Test sequences are being defined which will establish construction completion priorities. Upon completion of construction and construction testing, the systems, structures, or components (SSCs) will be turned over to CG&E under an improved jurisdictional turnover procedure. Upon acceptance of an SSC by CG&E, a Post-Turnover Controls

Program will be instituted to assure that no work is conducted on turned over SSCs unless authorized by CG&E.

o PROGRAM FOR THE CONTROL OF ACTIVITIES THROUGH INSTRUCTIONS, PROCEDURES, AND DRAWINGS

A project program for control of activities through instructions, procedures, and drawings will be implemented. Activities affecting quality will be prescribed by documented instructions, procedures, or drawings, including revisions to existing documents. Construction aids/sketches will identify governing design specifications and drawings and will be controlled where required, by project procedures. Construction and inspection personnel are required to use only engineering approved drawings and specifications in the performance of construction and inspection activities. The implementation of this program is integrated with several other CCP Programs including the Work Package Program, the Document and Records Control Program, and the Project Procedures Program.

o INSPECTIONS

Inspection programs are being restructured to assure that inspections are more closely coordinated with

construction activities which will improve the monitoring of activities affecting quality.

Hold points and witness points will be established to assist in assuring that required inspections or witnessing of activities are performed as required.

Additional redundant inspections and random surveillances will be performed as necessary to provide added verification of and confidence in the quality of work. Detailed planning will provide inspectors with the information necessary to perform comprehensive and complete inspection activities.

o AUDIT PROGRAM

The Senior Vice President - Nuclear Operations will have an independent audit performed at least annually by an outside organization to assess the effectiveness of the Project QA Program. The Senior Vice President will direct corrective action be taken on identified deficiencies and report the audit's findings to the ZOC and Owners Review Committee.

This will ensure that the adequacy of the Project QA Program will be periodically verified by an outside organization.

The Project Audit Program is being enhanced by expanding the independent audit of the PVQC to cover the QA/QC aspects of the CCP. CG&E will conduct audits to assess the adequacy and implementation of the QA Programs of all site organizations affecting safety-related quality activities. Bechtel will conduct audits of its safety-related quality activities and of S&L, GE, and contractors under its direction. S&L, GE, and contractors will conduct audits of their organizations' safety-related quality activities. Audit Program requirements for all audits conducted by the aforelisted organizations (CG&E, Bechtel, S&L, GE, and contractors) will provide for immediate reporting of nonconformances, noncompliances, and other deficiencies to Quality Program requirements, and identify remedial and corrective action(s) necessary to preclude recurrence of these conditions.

Audit emphasis will be placed, as a minimum, on Training Program, Corrective Action Program, Document Control Program, and Inspection Program activities. Audit plans and schedules will ensure that applicable

aspects of the Project Quality Assurance Program are audited at least annually or during the life of the activity, whichever is shorter.

1.3.2 Implementation Of CCP

The CCP will be implemented by CG&E as Project Manager, Bechtel as Project Director and Constructor, S&L as Architect/Engineer, GE as NSSS supplier and fabricator, and contractors as necessary.

No safety-related construction will be performed until the applicable CCP programs, procedures, and training programs are approved and in place.

Construction of safety-related SSCs will proceed, in accordance with the CCP, after it has been determined that such construction does not affect the conduct of the PVQC and that applicable procedures and QA programs are in place, as follows:

- o Proceed, prior to lifting of the SCO, on approval by the NRC Regional Administrator in each case, with safety-related construction rework which has already been defined and which can be done without impact on the conduct of the PVQC. Examples of such rework

are removal of coatings from containment steel and concrete, and correction of structural steel-bolted connections.

- o Proceed, prior to lifting of the SCO, on approval of the NRC Regional Administrator in each case, with safety-related construction involving new work which can be done without impact on the conduct of the PVQC. New work identified to date which may be in this category includes: installation of pipe supports, installation of support structure for the control rod drive mechanisms, and induction heating stress improvement of reactor coolant piping not previously treated.

- o When the information being gathered by the PVQC is completed for a system, subsystem, or area, a report of the results will be sent to the NRC Regional Administrator. A plan will be submitted to the NRC Regional Administrator for approval to proceed with the construction work or rework identified by the PVQC, provided it does not conflict with other PVQC activities.

The safety-related work identified above is to be accomplished under the new and approved QA/QC Program. To the extent that the above-mentioned construction requires a relaxation of the SCO pursuant to Section IV.B.(3) of the order, CG&E will submit a request for relaxation when it seeks approval of specific construction activities.

Construction of nonsafety-related SSCs will continue as permitted by the SCO provided it does not interfere with conduct of the PVQC. When the SCO is lifted, all construction will proceed in accordance with provisions of the CCP.

Work from the categories mentioned above is controlled by preparing and using the Work Package Program, an essential element in the control of construction activity.

1.4 INTERFACE WITH PLAN TO VERIFY THE QUALITY OF CONSTRUCTION (PVQC)

The PVQC process will identify work which must be accomplished under the CCP including incomplete work and work identified as a result of nonconforming conditions.

Construction of a system, subsystem, or area will be controlled to assure that construction does not interfere with or preempt the conduct of the PVQC or implementation of potential rework on systems or areas for which verification has not been completed. These controls, detailed in Section 7.2, include measures such as:

- o Specific training of construction personnel regarding PVQC interface restrictions.
- o Surveillance of construction personnel to assure compliance with the PVQC interface restrictions.
- o Frequent schedule meetings to coordinate interface activities of PVQC and CCP personnel.
- o PVQC releasing specific portions of CCP work based on evaluation and conclusion that a particular portion of CCP work will not interfere with PVQC activities.

Bechtel, as Project Director, has structured its organization to provide for separate management of activities under the PVQC and CCP. In short, Bechtel will devote sufficient manpower and management

resources to the execution of both the PVQC and the CCP to assure that each receives the degree of attention necessary for its successful execution.

1.5 PROGRAM RESULTS

The CCP, under a fully defined and implemented QA Program, will result in the following:

- o Assurance that each nonconformance is dispositioned and appropriate corrective action is implemented.
- o Assurance that needed rework, repair, or replacement of nonconforming SSCs is performed in accordance with approved design and procedures and with approved material.
- o Assurance that incomplete work is completed in accordance with approved designs, approved procedures, and with approved materials.
- o Provision for documentation of activities needed to complete work on SSCs and to repair, rework, or replace nonconforming SSCs.

- o Accomplishment of new work, including nonsafety-related construction in accordance with approved design, approved procedures, and with approved material.
- o Provision for requisite QA/QC records to CG&E to enable startup testing of the plant in compliance with regulations.

2.0 ORGANIZATION AND PROJECT MANAGEMENT

PLAN FOR REMAINING WORK

2.1 PROJECT MANAGEMENT

Cincinnati Gas & Electric Co. (CG&E) management is committed to completing the Wm. H. Zimmer Nuclear Power Station (Zimmer) project in a manner which will provide a safe and reliable nuclear power plant constructed to high standards of quality, engineering and construction, and in accordance with all applicable codes and regulations. To implement this commitment to quality, CG&E management is taking the following actions:

- o Restructuring and strengthening CG&E's nuclear operations through a centralized project organization with strengthened management and technical personnel.
- o Providing for an independent audit of PVQC.
- o Improving the monitoring of the implementation of the QA Programs by extending the duties of the PVQC Independent Auditor to include the QA/QC activities of the CCP.

- o Employing an experienced architect/engineer and constructor as project director and constructor to manage and complete the remaining work.
- o Establishing a first-rate Quality Assurance (QA) Program.
- o Developing and implementing detailed plans for the completion of the work [Plan to Verify the Quality of Construction (PVQC) and Continuation of Construction Plan (CCP)].
- o Providing for an independent design review.
- o Providing for the functioning of the Zimmer Oversight Committee (ZOC) whose purpose is to provide the CG&E Board of Directors with an independent source of information and an overview of all activities and operations associated with the completion of construction and transition to operation of the Wm. H. Zimmer Nuclear Power Station and on the basis of such overview, to advise the Board on policy matters affecting such activities and operations of the Zimmer project, and to ascertain that such policy is carried out

and that adequate information is being provided to the Board.

- o Providing for the functioning of the Owners Review Committee (ORC) consisting of the Chief Executive Officers of Cincinnati Gas & Electric Company (CG&E), Columbus & Southern Ohio Electric Company (C&SO), Dayton Power & Light (DP&L), one purpose of which is to provide a source of advice and counsel to the Senior Vice President, Nuclear Operations in all matters materially affecting the project.

The Course of Action provides a well-defined division of responsibility (DOR) for the PVQC and CCP. (See Appendix 1.) The DOR was designed to maximize the strengths of the major corporate participants with a restructured CG&E organization performing as Project Manager. The organizational structure, as depicted in Appendix 2, provides clear lines of communication and reporting relationships to senior CG&E management. This allows CG&E to provide strong leadership and exercise overall control and management of the project.

Management by objectives will be utilized with detail planning, monitoring, and control emphasized, and accountability strictly enforced. Achievement of

quality is the primary goal. Cost and schedule objectives are secondary to project quality. The Project Data Base (PDB) will be used to monitor and track critical project activity. Problems will be identified through the Project Control System and corrective action taken quickly.

o PROJECT MANAGEMENT COMMUNICATION AND VISIBILITY

Project management is to be kept cognizant of the status and progress of the project through review and approval of specified detailed plans, continuous involvement in construction, and a continuous review of quality, schedule, and cost. A monthly review will address pertinent project activities in progress, and a Monthly Progress Report to Corporate Management will be prepared following the review.

The Monthly Progress Report to Corporate Management will typically include a summary of project activities, a review of progress against the approved plan, and an analysis of problems detailing corrective actions, enacted or planned.

Project Management will meet periodically with the oversight and review groups listed in Section 2.1.1 to review project activities and obtain the benefits of their counsel.

o CORPORATE MANAGEMENT COMMUNICATION AND VISIBILITY

Corporate management will become cognizant of the status and progress of the project through reports, meetings, and audits. They will attend project review meetings on a periodic basis. CG&E's Corporate Management also interfaces with the oversight and review groups listed in Section 2.1.1 to assure the effectiveness of the quality-related activities of Zimmer.

2.1.1 Overall Management

CG&E establishes policy through its new management organization and provides overall management direction and overview of the entire project. The CG&E senior management organization is depicted in Appendix 3. CG&E establishes the policy and fundamental organizational structure which provides overall management and overview of the entire project.

A Zimmer Oversight Committee (ZOC) established by the CG&E Board of Directors consisting of five members of the Board serves to provide to the Board, generally, independent oversight of activities at the Zimmer Project and to assist the Board in the formulation of policy.

The ZOC will:

- o Provide to the Board an independent source of information and an overview for the Board of all activities and operations associated with the completion of construction and transition to operation of the Wm. H. Zimmer Nuclear Power Station; and
- o On the basis of such overview, to advise the Board on policy matters affecting such activities and operations of the Zimmer Project, and to ascertain that such policy is carried out and that adequate information is being provided to the Board.

The ZOC will retain an advisory staff of professional technical advisors and at least 3 respected members of the community.

The primary function of the advisory staff, is to provide to the ZOC a high level of appraisal of the professional and technical aspects of the Zimmer Project, including the implementation of the Plan to Verify the Quality of Construction (PVQC) and the Continuation of Construction Plan (CCP).

The basic authority of the advisory staff is to review and recommend. It will take direction from and report to the ZOC and perform other related duties which the ZOC may direct. It shall have no authority to direct or require action. It will carry out its responsibility by making reports and recommendations to the ZOC.

The advisory staff shall meet once each month, or more often at the call of the Staff Director. The Senior Vice President, Nuclear Operations, or his designates, shall meet with the advisory staff monthly for the purpose of reporting on the progress and status of the Zimmer Project.

All reports and recommendations to the ZOC must be presented to the ZOC in writing. The advisory staff is expected to reach consensus on all important issues.

The Senior Vice President, Nuclear Operations, if the ZOC directs, will respond formally to all recommendations made by the advisory staff by informing the ZOC what action, if any, was taken, or explaining why a particular recommendation was not adopted.

An Owners Review Committee consisting of the Chief Executive Officers of the Cincinnati Gas & Electric Company, Columbus & Southern Ohio Electric Company, and Dayton Power & Light, or their designees, normally will meet monthly at the Zimmer site. This committee will serve as a vehicle for obtaining and providing the owners with information regarding the project. The committee has no responsibility for directing any project activity. The Senior Vice President, Nuclear Operations from time-to-time seeks the advice and counsel of the committee in matters materially affecting the project; informs the committee of the status of construction and of problems and other developments at the project site; and meets with the committee at such times as the committee may request.

The scope of work of the Independent Auditor, retained by CG&E to audit the conduct of the PVQC, has been expanded to include the QA/QC aspects of the CCP such that all QA/QC activities through completion of the plant are subject to independent audit.

An Independent Design Review of sufficient scope to evaluate Zimmer plant design will be performed by an organization different from the PVQC and CCP Independent Auditor. The design review will be of sufficient depth to permit the reviewer to determine

if the design features under review meet the license application requirements. All Zimmer organizations will cooperate with the Zimmer Oversight Committee, Owners Review Committee, the PVQC and CCP Independent Auditor, and the Independent Design Review organization as required.

Bechtel, as Project Director, manages Sargent & Lundy's (S&L), General Electric's (GE) and contractors' CCP efforts related to Zimmer. Bechtel oversees the planning and performance of PVQC and CCP activities. Bechtel also assists CG&E in developing Quality Assurance/Quality Control (QA/QC) policies and procedures; and monitors implementation of the policies and procedures by S&L, GE, and contractors. All of Bechtel's duties under the CCP are set forth in a comprehensive contract with the owners.

The organizations, management responsibilities, scopes of effort, and interfaces are defined between CG&E, Bechtel, S&L, GE, and contractors. Direct lines of communication will be established and maintained at management and working levels, thus assisting in the coordination and control of engineering and construction processes.

2.1.2 Cincinnati Gas & Electric Company (CG&E)

The CG&E organization provides management control from the Senior Vice President, Nuclear Operations through the Assistant Vice President, Nuclear Projects to Bechtel. The Manager of the Nuclear Construction Department, the Manager of Nuclear Project Controls, and the Manager of PVQC and Nuclear Project Support Services report to the Assistant Vice President, Nuclear Projects. The three managers mentioned above, and their staffs, form the main interface with their counterpart managers in Bechtel's organization.

CG&E will exercise continuous oversight of Bechtel as well as S&L, GE, and contractors. CG&E has the authority and the responsibility for setting policy for the project and for overall project management and direction. Bechtel will report directly to the Assistant Vice President, Nuclear Projects (CG&E Project Manager) for day-to-day resolution of problems and direction/guidance with direct access to the CG&E Senior Vice President for Nuclear Operations for prompt resolution of differences that arise. CG&E through its restructured QA, Construction, and Engineering Departments will evaluate and oversee the performance of Bechtel to ensure that it is properly

and professionally executing its contractual responsibilities in accordance with CG&E's standards and policies. Although management direction is as described, information contacts are not limited to the described chain of responsibility.

2.1.3 Bechtel Power Corporation (Bechtel)

Under CG&E management control, Bechtel provides management, direction, and coordination to S&L, General Electric (GE), contractors, and vendors and will perform construction work as directed by CG&E. Bechtel's Site Project Director and Deputy Project Director provide direction to the Assistant Project Director for PVQC, Assistant Project Director for CCP, the Manager of Engineering and Licensing, the Construction Manager, and the Manager of Controls and Services. Bechtel's Site Project Director will coordinate QA/QC activities through the Bechtel Manager of Quality. (See Appendix 4.)

These line managers are supported by the following groups:

- a. Project Engineering
- b. Quality Assurance
- c. Quality Control
- d. Quality Engineering

- e. Construction Supervision
- f. Field Engineering
- g. Schedule Control and Reporting
- h. Cost Control and Reporting
- i. Training
- j. Personnel
- k. Safety
- l. Finance and Accounting
- m. Procurement
- n. Contract Administration

Bechtel's organization provides for the separate management of PVQC and CCP activities and takes adequate measures to prevent interference of the CCP with the PVQC. In addition, personnel assigned to perform the PVQC will have no other major responsibilities during the period in which they are working on the PVQC.

The Bechtel Manager of Engineering and Licensing, through Bechtel project engineers and their staffs, will manage completion of design engineering by S&L and contractors. Interfaces will be provided between Bechtel and S&L, as required, to monitor and manage the design and design change processes covering all areas [including the nuclear steam supply system (NSSS), and mechanical, electrical, and civil engineering disciplines]. Specific monitoring

of licensing requirements and configuration control will be provided.

Bechtel's Construction Manager, assisted by the Field Construction Manager and staff, direct construction and manage contractors' construction activities. (See Appendix 5.) The Field Construction Manager's staff consists of a Project Superintendent (CCP), responsible for the satisfactory completion of all construction activities, and a Project Field Engineering Manager, responsible for all field engineering activities. Also reporting to the Field Construction Manager are the Project Superintendent (services) and the Labor Relations Representative.

The Project Superintendent's (CCP) staff consists of a Project Systems Superintendent, a Field Superintendent, a Project Field Engineer (CCP), and a Contracts Supervisor.

The Project Systems Superintendent is responsible for managing the completion of systems, structures, or components utilizing teams as further described in Section 2.2. The Field Superintendent and staff are responsible for the overall supervision of the crafts. The Project Field Engineer (CCP) is responsible for the overall supervision of the field engineering activities associated with the CCP. The

Project Field Engineer (CCP) reports to the Project Superintendent (CCP) for project direction and to the Project Field Engineering Manager for administrative and technical direction. The Contracts Supervisor is responsible for the administration of contracts with other contractors.

Project control responsibilities are provided by the Bechtel Manager of Controls and Services. Cost and schedule preparation, monitoring, and reporting engineering and construction progress is the responsibility of the Controls Group. The management of the Project Data Base is a primary responsibility of the Controls Group. Interface with CG&E, S&L, Bechtel, and contractors by the Bechtel Controls Group occurs at numerous levels of the respective organizations. The data maintained by the Controls Group is used to support engineering, construction, and miscellaneous support groups.

QA, QC, and Quality Engineering (QE) functions are managed by the Bechtel Manager of Quality who interfaces, through staff members, with S&L, GE, and contractors' QA/QC managers and staffs.

As Project Director, Bechtel manages and directs primary support functions which service total project

needs, such as the operation and maintenance of the Project Data Base, document control, scheduling, and cost reporting.

2.1.4 Sargent & Lundy (S&L)

S&L's design engineering responsibility is discharged by the S&L Project Director. Supporting S&L's Project Director are S&L's Site Project Manager and QA Coordinator. The Bechtel Manager of Engineering and Licensing provides the S&L Project Director with direction for the design engineering effort in support of the PVQC and CCP through turnover.

CG&E, through the Assistant Vice President, Nuclear Engineering, provides direction to the S&L Project Director for engineering activities other than PVQC and CCP.

Reporting to the S&L Project Director are the S&L Project Manager, assisted by the S&L Field Project Manager. S&L's Project Manager is responsible for providing the design criteria and translation of these criteria to design drawings and specifications. S&L's Field Project Manager provides design clarification and design engineering support at the jobsite for the CCP. The S&L field organization will approve the disposition of nonconformances as

required, resolve construction interferences, and provide resolutions to constructability problems as they arise. S&L field staff at the jobsite will provide timely responses for CCP and will interface with the S&L Home Office as required.

2.1.5 General Electric (GE)

Under Bechtel management direction, GE is responsible for the design and fabrication, including QA activities, of the NSSS. GE is represented at the jobsite by the Resident Site Manager who reports to the GE Zimmer Project Manager in San Jose, California. Supporting the GE Resident Site Manager are a Site Electrical Engineer and a Site QA Engineer.

GE's primary interfaces are with the Bechtel Manager of Engineering and Licensing and S&L's Site Project Manager. Coordination and communication interfaces are maintained by GE's Resident Site Manager with the Bechtel Construction Manager.

2.2 SYSTEMS COMPLETION APPROACH

The Zimmer CCP will use a systems completion approach under the direction of the Bechtel Project Systems Superintendent. (See Appendix 6.) This management technique organizes the effort to complete remaining

work on a system, structure, or component. All elements required to support the turnover of a plant system, structure, or component (SSC) are brought together under a System Team. Each System Team is made up of personnel from Bechtel, S&L, GE, and contractors as required.

The System Team Leader under the direction of the Bechtel Project System Superintendent organizes crafts, supervision, field engineering, scheduling, procurement, and construction testing resources into a team to schedule the remaining work, determine material needs, and track their procurement. The team also must determine and expedite necessary design requirements, expedite the resolutions of nonconformances, and any other items required to complete the remaining work. QC engineers are assigned to interface with the team to provide and coordinate timely inspections and documentation.

Members of a System Team are supported by discipline-oriented groups within the supervisory and field engineering areas to provide the numbers and mix of technical personnel required for a given system. A team may be responsible for several systems or areas. The assignment of systems and the makeup of the teams will be monitored and revised as necessary by construction management to comply with

the project completion and testing schedule dates. The Project Data Base provides the status of remaining work, the availability of materials, and tracks the progress during the course of the work.

The System Team approach provides for interface between construction and engineering to support system turnovers. Working-level meetings to review progress on the completion of systems will include, as a minimum, Bechtel, S&L, and GE. This assures that project schedule needs are understood and are being addressed as required by all participants.

Daily meetings will be conducted by the System Team Leader to identify problem areas and schedule completion of outstanding work items. During the meeting, action items will be defined and individuals assigned responsibility for resolution. This meeting will coordinate all interface activities, identify construction, procedural, material, design, and documentation problems needing immediate attention. These daily reviews will measure detailed Level IV Schedule commitments against actual progress to ensure the proper resources are brought to bear on problem areas.

As Project Director, Bechtel interfaces with and surveys all contractor activities to assure compliance with procedures and provide support as required.

2.3 QUALITY ASSURANCE/QUALITY CONTROL (QA/QC)

APPROACH

The QA/QC approach provides a strengthened QA/QC organization. Overall responsibility for QA rests with CG&E. Under the management of Bechtel and the oversight of CG&E, all construction organizations are responsible for quality, compliance with regulations and commitments, and maintaining a highly professional quality assurance atmosphere free of harassment or intimidation.

Construction turnover and startup activities will be performed by trained and qualified personnel to meet predefined acceptance criteria as set forth in approved procedures. Completed quality-related work will be inspected by the performing organization's QA/QC department. Turnover processes will be audited by Bechtel's and CG&E's Quality Assurance organizations.

The CG&E Assistant Vice President, QA reports directly to the CG&E Senior Vice President, Nuclear Operations and has a line of communication to the President and Chief Executive Officer of CG&E. The CG&E Manager of QA reports to the Assistant Vice President, QA. Reporting to the Manager of QA are staff groups responsible for quality engineering, inspections, audits, surveillance, corrective action and trending program, and operations. The CG&E QA organization sets the QA policies for the project and maintains surveillance and oversight of the QA activities of Bechtel, S&L, GE, and contractors.

The Bechtel Manager of Quality reports directly to the Ann Arbor Power Division's Manager of Quality Assurance. Bechtel's Deputy Manager of Quality, the Project QA Engineer, the Project QC Manager, the Project Quality Engineer, the Procurement Supplier Quality Manager, and their staffs report to the Manager of Quality. Bechtel's Manager of Quality is responsible for Bechtel quality activities and coordinates them with Bechtel's Project Director. The Manager of Quality is also responsible for the surveillance, oversight, monitoring, and auditing of engineering, procurement, construction, and quality activities of S&L, GE, and all contractors.

S&L's QA Coordinator has the responsibility for S&L's quality activities, receives direction from the S&L Corporate Manager of QA, and coordinates S&L quality activities with the S&L Project Manager.

The QA managers of all project entities are responsible for adherence to the CG&E QA policies established for the project. The site organizations as described in this section provide for a clear division of responsibilities among the organizations and within each organization. The QA managers have lines of communication between each other and coordinate their activities with each other. They will interface with each other on a day-to-day basis at all levels. Interorganizational QA Manager and Vice-Presidential level meetings will be held to discuss quality problems and program status.

All QA/QC personnel will be trained, qualified, and certified as required by relevant ANSI standards. They and the construction personnel will be made fully aware of the program to prevent harassment and intimidation of QA/QC personnel.

As additional assurance to CG&E management that the continuation of construction will proceed in accordance with the requisite QA/QC standards, the

scope of work for the Independent Auditor for PVQC has been expanded to include the QA/QC aspects of CCP.

2.4 ORGANIZATIONAL RESULTS

The organizational approach for project management, system completion, and QA/QC will result in:

- o A restructured management team consisting of a highly experienced and motivated senior management staff.
- o The addition of Bechtel as Project Director and Constructor providing additional nuclear power plant construction experience.
- o A clear definition of the responsibilities and interfaces of all project organizations.
- o Complete control of the completion of systems, structures, and components by utilizing system teams.
- o Resolution of interface problems between the implementing activities permitting a more concentrated effort to be applied.
- o Management support of the QA/QC program.

- o Clear QA/QC communications with upper-level management and ensured greater involvement of Project Management in QA/QC matters.
- o Strengthened QA/QC organizations.
- o An independent audit of CCP QA/QC activities.

3.0 GENERAL MANAGEMENT PROGRAM ELEMENTS

3.1 GENERAL

This section describes the major General Management Program Elements that must be met prior to continuing construction on safety-related work at the Wm. H. Zimmer Nuclear Power Station (Zimmer). (See Appendix 7.)

The basic activities required to be completed prior to the restart of construction on safety-related work are:

- o Development of applicable programs and procedures required to control the continuation of construction such as the Plan to Verify the Quality of Construction (PVQC) Interface and Work Package Programs.
- o Completion of any pertinent prerequisites and accomplishment of required corrective actions.
- o Satisfactory completion of the Pilot Program.
(See Section 7.10.)
- o Nuclear Regulatory Commission (NRC) approval to proceed with safety-related work.

The following Continuation of Construction Plan (CCP) major elements must be implemented, as appropriate, prior to implementing the Pilot Program, preparing work packages, or continuing construction:

- o Organization, including a substantially strengthened staff.
- o Procedures and interfacing documents.
- o Quality Assurance/Quality Control (QA/QC) Program.
- o Training, qualification, and certification programs.
- o Document and Records Management Program.
- o Project Control Systems.
- o Configuration and Design Change Control Program.
- o Nonconformance Report (NCR) Program.
- o Corrective Action Program.

- o Work Package Program.
- o Welding/Special Processes Program.
- o Procurement and Material Control Programs.
- o Prevention of Harassment of QA Personnel Program.
- o Construction Testing Program.
- o PVQC Interface Program.
- o Pilot Program Definition.
- o Project Audit Program.

A Pilot Program (outlined in Section 7.10), using nonsafety-related systems, will be implemented to demonstrate that the CCP is effective in ensuring that safety-related work will be accomplished in conformance with design and regulatory requirements. Prior to the commencement of each Pilot Program, the CCP major elements, programs, and procedures will be reviewed and a list developed and approved of those elements required as prerequisites to commencing each specific Pilot Program. All CCP elements are not applicable to each Pilot Program.

The Pilot Program will exercise the programs, procedures, and control systems required for safety-related work including preparation of work packages, the training of personnel, the performance of physical work in accordance with approved procedures, and the performance of QC inspection in accordance with the Project Quality Program. All work will be performed as if it were safety-related. Audits and surveillances of the entire process will be conducted in accordance with the Project Quality Program.

After the appropriate CCP major elements are in place, work packages will be prepared, based on approved design documents, for incomplete work, new work, or work resulting from PVQC. The work packages will be reviewed to ensure that performance of the work will not interfere with or preempt the conduct of the PVQC or implementation of potential rework.

After submittal of the CCP to the NRC and the completion of the necessary CCP major elements, a request will be made to the NRC to approve the resumption of safety-related work which will not impact the conduct of PVQC activity. Sources of work are:

- o Incomplete work which is already a matter of record.
- o New work.
- o Rework previously identified.
- o Work identified by PVQC.

Prior to complete implementation of the CCP, other specific safety-related work may proceed upon the successful completion of the Pilot Program, the availability of the work packages, the completion of applicable prerequisites, and the approval of the NRC.

3.2 INTERFACING DOCUMENT AND PROCEDURES HIERARCHY

CG&E with assistance from Bechtel is developing and will issue a Zimmer Procedures Manual (ZPM) containing procedures for major functional processes such as design control, procurement, construction, inspection, and quality assurance. The procedures will address the responsibilities and interfaces between CG&E, Bechtel, and major Zimmer contractors.

Bechtel will provide a Bechtel Procedures Manual (BPM) for CG&E approval which will utilize the ZPM procedures directly wherever possible and provide

additional details to define Bechtel's responsibilities. It will also supplement the ZPM description of the interface relationships between Bechtel and other project entities.

Each contractor will develop procedures, including detailed work procedures, as required to fulfill their assigned responsibilities using elements of the ZPM and BPM. All procedures will meet the requirements of site hierarchical documents [e.g., CG&E's Final Safety Analysis Report (FSAR), CG&E's Project Quality Assurance Manual (PQAM), Bechtel's Nuclear Quality Assurance Manual (NQAM)], applicable regulatory guides, codes, standards, and other commitments. Bechtel is assessing adequacy and implementation of the procedures.

Bechtel, as Project Director, is managing a comprehensive Centralized Procedures Development Program which is based on experience at other nuclear projects, knowledge of nuclear QA programs, and regulatory requirements. This program will provide identification of hierarchical relationships between procedures. (See Appendix 8.) The program will also provide a method for maintaining commitment and hierarchical control on a continuing basis and an administrative process for preparing, reviewing, and issuing procedures.

A Procedures Development Group has been established to organize the review and development process, analyze existing procedures, and identify new procedures required to support the continuation of construction. Representatives from each major project organization for each functional area (e.g., QA, construction, project controls) will perform review and statusing functions for their respective area. Administrative support, technical support, and planning functions will be the responsibility of the Procedures Development Group.

A procedures data base will be the principal tool used by the project to ensure that procedures are maintained current with commitment and policy requirements.

This program will provide an integrated, comprehensive management tool for assuring that the procedures carry out the commitments and policies established for the CCP.

3.3 PREVENTION OF HARASSMENT OF QA PERSONNEL

A formal, site-wide program is being established to prevent harassment and intimidation of QA personnel and other personnel having quality concerns. Harassment of personnel will not be tolerated at

Zimmer. All QA organizations will report incidents of harassment to senior management within their respective companies. This includes CG&E, Bechtel, S&L, GE, and contractors. Personnel will be assured that they are free to perform their functions without fear of reprisals. All personnel have been or will be advised in writing of the antiharassment policy and the penalties regarding harassment of personnel. These measures are described in training programs. Any suspected or reported case of harassment will be promptly investigated and appropriately resolved. Appropriate sanctions or disciplinary actions will be taken against those individuals engaging in harassment or intimidation.

Personnel who believe that they are the victim of harassment have an obligation to immediately report concerns about harassment to their supervisor, their company QA Department management, the CG&E QA Department management, or the Assistant Vice President, QA. If such concerns are not resolved, the individual should inform successively higher levels of management, including the Senior Vice President, Nuclear Operations or the President of CG&E. The individual may also bring any harassment concerns to the attention of the NRC or its Resident Inspector.

CG&E will treat these concerns confidentially and give them urgent, careful consideration. There will be no reprisals, penalties, or discriminatory action toward any individual for bringing forth such concerns.

3.4 IDENTIFICATION OF CCP SAFETY-RELATED AND NONSAFETY-RELATED WORK

The CCP will include both safety-related and nonsafety-related work.

3.4.1 Nonconformances and Incomplete Work on Safety-Related Systems, Structures, or Components (SSCs) from PVQC

The PVQC will identify discrepancies and incomplete work through the inspection of installed work and review of procurement, material receipt, storage, installation, and other related documentation. Any nonconformances found will be documented on an NCR. The disposition of the NCR, any work (administrative or physical) resulting from that disposition, and incomplete work identified by the PVQC will be performed during the CCP.

3.4.2 Rework From Quality Confirmation Program

Rework already identified by the Quality Confirmation Program (QCP) will be performed during the CCP subject to the requirements established by PVQC.

3.4.3 New Work from Continuing Design Analysis

Work resulting from a continuing design analysis will be identified and performed during the CCP phase.

3.4.4 Known Incomplete Work

Incomplete work which is already a matter of record will be performed during the CCP subject to the requirements established by PVQC.

3.4.5 Nonsafety-Related Work

A list of nonsafety-related work will be prepared using various sources of information, such as records, inspections of existing installations, and a review of design changes and new design requirements.

3.5 PROJECT CONTROLS PROGRAM

Under CG&E's overall project management and direction, Bechtel will develop and implement a

Project Controls Program. This program will consist of a Project Plan, a process for monitoring and statusing progress relative to the plan, the identification of cost and schedule changes/trends, and a system to report that status to the project's management.

The Project Plan is outlined in the project forecast which identifies the scope of the project, the to-date and to-go costs, and the schedule for completion of the project. The Project Plan will be the framework for developing detailed project control systems once the project forecast has been reviewed and approved.

3.5.1 Project Scope Definition

The detailed project scope is described by the design drawings, specifications, programs, and procedures described in the project procedures manuals. A forecast of remaining work on the project has been identified in the project forecast which Bechtel prepared. This completion forecast includes a cost estimate and schedule which establishes the budget for remaining work. The technical scope evaluation was based on an assessment of incomplete work,

remaining design effort, expected new design requirements, and an estimate of work required as a result of PVQC.

3.5.2 Project Scheduling

The Project Schedule Program consists of a hierarchy of schedules. It makes the Project Plan clearly visible to the various levels of the site organization. The program serves as a basis for monitoring progress against the Project Plan. This hierarchy of schedules consists of four levels.

The Level I, Milestone Schedule, establishes major project milestones which form the basic schedule framework for planning and integrating project engineering, procurement, construction, startup, and quality activities. This schedule will be reviewed and approved by CG&E's and Bechtel's senior managements and cannot be changed without their concurrence.

The Level II, Project Summary Schedule, is an integrated project summary schedule of engineering, procurement, construction, startup, and quality activities which expands the detail of the Level I Schedule. The Level II Schedule will be placed on the Project Data Base and resource loaded as required.

The Level III, Intermediate Schedule, will be developed within the framework of the Level II Schedule. The Level III Schedules will be bar charts, and/or time- or nontime-scaled-logic diagrams. They will be resource or quantity loaded, if required: they form the framework for the more detailed daily work plans. The content and complexity of a Level III Schedule is determined by the associated scope of work which is typically a specific task, startup system, structure, or component.

The Level IV, Working Schedule, will be the schedule used by project personnel to plan and perform work on a day-by-day basis. It is the most detailed schedule within the project schedule hierarchy and may take the form of bar charts or punchlists. The Level IV Schedule is a five-week schedule, updated weekly, which shows detailed work activities. The previous week, current week, and upcoming three weeks are included.

Each of the schedule levels within the hierarchy provides a basis of progress review and reporting.

3.5.3 Project Cost

The Project Completion Forecast, completed by Bechtel in October 1983, is an assessment of the project cost and schedule and provides a basis for all detailed budgets and controls including engineering costs, quantities, construction labor, nonmanual effort, equipment, material, contract, and CG&E costs.

3.5.4 Project Budgets

The Project Budgets for scope, schedule, and cost provide a project management tool for tracking progress and monitoring the cost and schedule performance of the project.

The budget defines an expenditure and resource distribution plan for remaining work. The budget defines quantities, unit manhours, costs, total manhours, total dollars, and total time required to complete the project.

3.5.5 Continuous Monitoring

Management control through early corrective action is provided for by a program designed to allow a continuous monitoring of the scope, schedule, and cost budgets.

The remaining physical scope (quantities such as linear feet of pipe, number of connections, etc) is a key element in measuring progress. Installation of these quantities will be monitored on a facility and system basis.

Inspection, verification, and disposition of nonconforming conditions is another key factor in establishing the remaining scope. These processes will also be tracked to assist in the evaluation of project status.

Tools for monitoring scope include the engineering control system. It divides engineering design activities into individual tasks and monitors expenditures and progress against the plan.

The Project Data Base allows management to monitor scope changes by quantity tracking. Commodities to be tracked and statused include structural steel, large and small pipes, instruments, hangers, pipe welds, cable footage and terminations, and raceways. Commodities will be added to the Project Data Base for tracking as required.

The Project Data Base will also provide information on various key documents.

3.5.6 Finance and Accounting

Actual project costs are incurred based on the expenditure of labor manhours, the purchase of material, and incurrence of other liabilities. The project Finance and Accounting Organization receives invoices, prepares payrolls, and dispenses checks. Bechtel will perform these activities in a controlled manner and will provide information to the project Cost and Scheduling Organization for use in project monitoring and forecasting.

3.5.7 Labor, Material, and Document Tracking (Project Data Base)

As Project director, Bechtel will implement a Project Data Base (PDB). The PDB provides for tracking labor, material, documents, and statusing the integrated schedule.

The document portion will be tracked in accordance with Sections 3.7.1, Construction Document Control, and 3.7.2, Construction Records Control. Document tracking is accomplished using the tracking capabilities discussed in Section 3.5.5.

Material will be tracked through the project in accordance with Sections 5.0, Engineering, 6.0, Procurement, and 7.0, Construction. Material tracking will be accomplished using the quantity tracking capabilities of the PDB.

o METHODOLOGY OF PROJECT DATA BASE DEVELOPMENT

The key element for successful operation of the Project Control Program is the establishment and maintenance of the PDB. To be useful to all project entities, the data collected in the data base must be comprehensive, accurate, and timely. Project entities are being surveyed to determine their data requirements. These needs will be compared with the requirements of the CCP, interfaces with other project entities, and the PDB's overall capability. After the determination of the project data requirements, the Project Data Base will be developed and implemented.

o MAINTENANCE OF THE PDB

Once the PDB is in place, the responsibility for maintenance will be assigned to the originators and users of the data. Data accuracy and quality will be maintained by placing responsibility at its source

and holding each entity strictly accountable for the accuracy and timeliness of that information.

The project will use the Project Data Base to provide timely information on quality, scope, and schedule status. This will assist in the planning, performance, and control of the work associated with the project completion effort.

3.6 MANAGEMENT PROGRESS MEETINGS/REPORTS

Effective project management is dependent on a system of timely communication of accurate project information which enables appropriate decision making and necessary corrective action.

A Monthly Progress Meeting will be held to formally review project status. In addition, Project Management will meet whenever required to address project issues requiring action.

A system of reports will use information from the management control systems and the PDB to provide CG&E's and Bechtel's managements with the information required to manage the completion of the project in an efficient and cost-effective manner while assuring that quality remains as the primary objective.

3.6.1 Monthly Project Progress Reports

The primary management report for communicating the status of the project to CG&E management is the Monthly Project Progress Report.

The Monthly Progress Report addresses construction progress, quality of work, cost and schedule performance against budget and forecast levels, and provides identification of problems and proposed corrective action for effective completion of the plant.

The Monthly Project Progress Report contains an executive summary with a project overview, a summary of quality activities, and a comparison of cost and schedule performance against the Continuation of Construction Plan.

The summary is followed by a detailed presentation of the activities of the project entities including QA/QC, PVQC, CCP, Engineering and Licensing, Procurement, Cost and Schedule, Startup, and Operations.

These sections typically include:

- o An assessment of quality program status, trends, effectiveness, and audit results.
- o A discussion of program status and current work activities.
- o A discussion of problem areas and proposed corrective actions.
- o Progress statistics to reflect current work activity such as nonconformance dispositions, change control activity, work package activity, purchase orders and quality verification inspection reports.
- o Analysis of integrated project schedule progress and problem areas, cost analyses, and productivity assessment.

3.6.2 Other Management Reports

Other reports submitted periodically to CG&E will include:

- o The Project Trend Report - consolidates all identified cost and schedule trends against the project budgeted scope, schedule, and cost.
- o The Quarterly Update of the Project Milestone and Project Summary Schedules (Level I and II) - provides visibility of schedule status on an ongoing basis.
- o The Project Forecast - periodically reevaluates the total project cost and schedule, and results in an update of the budget.
- o The Monthly Critical Items Action Report - identifies the critical areas on the project requiring management attention and assigns responsibilities for corrective action.

The reports listed above and the information contained therein provide the visibility required by CG&E's and Bechtel's managements to effectively manage the Zimmer project to construction completion, orderly turnover to CG&E, and operation.

3.7 CONSTRUCTION DOCUMENTS AND RECORDS MANAGEMENT PROGRAM

o GENERAL

The Construction Documents and Records Management Program defines all documents and records generated and/or used in the construction of Zimmer, describes the type of control required for these documents and records during construction, ensures that the required level of control is maintained, and conducts timely and orderly turnover of these documents and records in accordance with CG&E directives.

A document is defined as any written or pictorial information that may or may not be quality-affecting. A quality assurance document is an inprocess document that furnishes evidence of the quality of items or activities affecting quality. A quality assurance record is a completed quality assurance document. It is considered complete when it has been processed and accepted by QA. A record is a document or correspondence retained specifically for proof or verification of an activity, usually stored or controlled for future reference.

This Document and Records Management Program is established to:

- o Create and maintain the Construction Records Control System, which will include Construction Document Control and a Quality Records Vault.
- o Conduct an inventory of construction documents and records.
- o Establish a Project Documents List (PDL) by document category.
- o Maintain the Project Documents List (PDL) current as new documents are added.
- o Identify and collect those documents and records to be controlled in the Construction Records Control System.
- o Provide consistent processing of all project documents and records.
- o Utilize the Project Data Base for document and record tracking.

- o Coordinate construction document and record control functions with CG&E plant operations to ensure smooth turnover of documents and records and transition of control activities.
- o Ensure complete, controlled, and timely distribution of construction documents and records.
- o Ensure that the document and records management procedures incorporate the requirements of applicable NRC Regulatory Guides and ANSI Standards.
- o RESPONSIBILITY

CG&E is responsible for:

- o Providing an overview of the Documents and Records Management Program.
- o Providing input for the development of the PDL.
- o Defining the documents and records turnover requirements.
- o Providing documents and records as required for the continuation of construction.

As Project Director, Bechtel is responsible for managing:

- o The development and maintenance of a PDL in coordination with CG&E, S&L, HJK, GE, and contractors.
- o In conjunction with CG&E determine the organizations responsible for controlling categories of documents and records identified on the PDL.
- o The establishment and maintenance of Construction Document Control.
- o The development and maintenance of a Construction Document Distribution Schedule (CDDS).

S&L, HJK, GE, and contractors are responsible for:

- o Providing input for the development of the PDL.
- o Providing documents and records as required for the continuation of construction.
- o Participating in the establishment of Construction Document Control.

o CONSTRUCTION DOCUMENTS AND RECORDS CONTROL SYSTEMS

The Project Document List (PDL) identifies all categories of documents and records such as location, originating company/department, approximate volume, quality- or nonquality-related, the group responsible for control, the scope and interval of documents and records turnover, and the final repository of documents and records after turnover.

The PDL identifies which documents are controlled in Construction Document Control, the Quality Records Vault, or those maintained and controlled by the originating companies/departments. A Document and Records Turnover Schedule will be developed based on the System/Area Turnover Schedule and on PDL categories.

A Construction Document Distribution Schedule (CDDS) will be developed which defines the current required distribution of controlled documents.

3.7.1 Construction Document Control

Documents are processed through Construction Document Control where they are formally received, registered, reproduced/distributed, filed, and surveyed as required.

During receipt, every document is reviewed for legibility and administrative accuracy and completeness. If incomplete or inaccurate, the document is returned to the originator for correction and resubmittal.

Each document or package of documents is registered to ensure retrievability and action item control. Standard reports, which show the current status of documents and any outstanding actions, are produced and distributed to the project.

For reproduction/distribution control, the CDDS is prepared and maintained by Construction Document Control. Construction Document Control is the control point for reproducing and distributing documents. The documents are distributed in accordance with the CDDS. Copies of documents are distributed to work packages and stick files. As new revisions are received, superseded revisions are physically removed from applicable work packages and stick files; they are replaced with the current applicable document.

Documents are filed by type of document. Access to document control files is limited to protect against loss or damage.

Construction Document Control files are surveyed to ensure completeness and accuracy of files. Appropriate action is taken to correct any discrepancies. Stick files and work packages, as well as other controlled documents, are surveyed by Construction Document Control and QA/QC personnel.

3.7.2 Construction Records Control

The quality records are processed into a Quality Records Vault in accordance with procedures. Procedural steps include receipt, indexing, distribution, filing, and storage.

Newly received records will be reviewed for completeness and legibility. Incomplete records will be returned to the originator or responsible party for correction and resubmittal.

Every record received is indexed to ensure prompt retrievability. The index is revised as necessary to reflect additions and deletions in the records files. This list of construction records will be maintained by Bechtel and turned over to CG&E control upon final turnover of the SSC.

Distribution of record files is controlled, and distribution is limited to a published list.

Records are filed in accordance with the record index and with detailed instructions. Records will be stored in accordance with ANSI N45.2.9 as endorsed by Regulatory Guide 1.88, Rev. 2 and amended by the FSAR, Appendix C.

3.7.3 Construction Documents and Records Turnover

Bechtel turns over construction documents or records to CG&E in accordance with project requirements. CG&E reviews and accepts or rejects the documents in writing. Acceptance is based on criteria established between CG&E, Bechtel, and contractors. Documents accepted by CG&E are sent to the appropriate repository.

3.8 TRAINING OF CCP PERSONNEL

o GENERAL

CG&E is issuing a directive to define the scope of all site training, including construction training activities. Training will be performed in accordance with this directive. It will address the training of project personnel including construction, operations, engineering, licensing, and QA/QC personnel, and will

identify the division of responsibilities between CG&E, Bechtel, S&L, GE, and contractors for all areas of training.

The directive defines:

- o Requirements for the training programs for personnel at all levels.
- o General employee training, including indoctrination requirements for quality work.
- o Responsibility for the preparation and implementation of the required programs.
- o Techniques for the development and selection of content of the required training programs.
- o Requirements for the development and selection of content of the required training programs.
- o Requirements for the establishment of standards for instructor qualifications.
- o Requirements for the establishment of standards for training documentation and record retention.

- o Working relationships among organizations conducting training activities.

This directive constitutes the basis upon which the Master Training Plan for the Zimmer project is being developed. The Master Training Plan provides an overview of all the training activities which must be accomplished to support key evolutions, events, or milestones in the construction and operation of the Zimmer project.

CG&E will perform an in-depth review and analysis of the various Zimmer training programs and ensure that appropriate corrective actions are implemented to correct identified problems. CG&E will also monitor the overall training programs.

Bechtel will provide schedules of construction phase training for inclusion in the Master Training Plan, perform training as specified in the Master Training Plan, and approve and monitor the training programs of S&L, GE, and contractors. CG&E also monitors all construction site training.

o CCP PERSONNEL TRAINING

Personnel assigned to the continuation of construction work will receive indoctrination and specific training commensurate with their assigned duties. This includes general training common to all personnel such as an historical review of the project; explanation of the unique requirements associated with construction of nuclear power plants, especially in the area of QA; emphasis on the importance which Project Management places on QA; an overview of the Project QA Program; a description of Project Management's position on harassment and intimidation and an explanation of procedures for reporting incidents of harassment and intimidation; and a description of procedures for reportable deficiencies pursuant to 10 CFR 50.55(e) and 10 CFR Part 21.

Upon assignment to the continuation of construction work, employees will be notified of the required specific training applicable to their positions. The employee will be required to satisfactorily complete prerequisite training requirements prior to performing applicable CCP work. Training is provided according to discipline and job function. Training focuses on assuring knowledge of applicable procedures and proficiency in performing job

activities. Additionally, it emphasizes that the individual performing an activity is responsible for the quality of the activity and that the individual has satisfied their responsibility for quality.

Centralized training will be performed when possible to eliminate duplication and possible confusion.

The CCP Training Program includes the following elements:

- o Project personnel indoctrinated in Quality Program requirements prior to performing work.
- o Training of each employee in current applicable manuals, standards, procedures, and associated requirements as specified by Bechtel.
- o Training performed to improve proficiency in areas identified in audits, trends, etc, as needing improvement.
- o Training may, when required, consist of reading applicable documents followed by written documentation that the employee has read and understands the documents.

- o Training may, when required, consist of reading applicable documents followed by a documented review with the instructor or supervisor.
- o Formal training classes, when required, conducted in compliance with a written lesson plan. The training classes may use lectures, video or cassette/slide presentations, or a combination thereof.
- o Documentation of training.
- o Mandatory periodic retraining and requalification of personnel. Revisions to procedures reviewed by the approving organization who recommends additional training as appropriate.

Management and supervisory personnel are required to undergo appropriate training in procedures, job proficiency skills, and management skills. This training provides managers and supervisors with methods and techniques to encourage communication and reporting of employee concerns related to the quality and safety of Zimmer and emphasizes the significance of individual employee contribution to site quality and safety.

A procedure is being developed that establishes requirements for a training program evaluation by examinations, monitoring, and periodic evaluations.

Training Program materials are available for examination by the NRC.

3.9 FACILITIES

An additional 160,000 square feet of construction and engineering office space is under construction to provide adequate support to PVQC and CCP activities. Parking facilities are being enlarged and relocated in combination with a revised site access plan. A new craft change house and relocated brass alley (time office) are planned to further enhance jobsite facilities.

These additional facilities will result in less congestion in the work areas, centralized support activities, and increased efficiency of operations. The overall benefit of these facility and infrastructure improvements will be improved coordination and communications between onsite organizations charged with the responsibility for the continuation of construction.

3.10 AVOIDANCE OF PAST GENERIC PROBLEMS

To avoid past generic problems, actions are continuing to:

- o Identify past generic problems.
- o List and analyze these problems for corrective action.
- o Verify that the corrective action is effective and that the generic problem should not recur.

The methods used to establish the program include:

- o Analyses are being conducted of historical generic problems as documented in the SCO, NRC Evaluation Team Reports, reports of the National Board of Boiler and Pressure Vessel Inspectors, NRC Inspection Reports, Corrective Action Reports (CARs), Management Corrective Action Reports (MCARs), 50.55(e) Reports, and the COA. An historical generic problems list of the generic problems is being developed and the problems identified to the applicable SSC or work activity and the root cause or program deficiency.

- o Allegations of past unsatisfactory workmanship will continue to be assessed, and action taken to address valid concerns.
- o A licensing commitment list and the historical generic problems list, which includes identification of programmatic improvements that must be incorporated into the implementing procedures, will serve as reference tools to help restructure the QA program and retrain project personnel.
- o These lists provide verification of the effectiveness of past corrective action to these generic problems, and are used to identify incomplete or indeterminate corrective action for further investigation/correction in the CCP.
- o In addition to the analysis and quantification of software/system/generic problems, an analysis and verification of NRs that have been written against SSCs is being performed, with the corrective action verified through PVQC. This data will be included in the Deficiency Data Base (DDB) to permit tracking and evaluation of future nonconformances according to past problems.

3.11 TRACKING OF FUTURE NONCONFORMANCES,
IDENTIFICATION OF GENERIC PROBLEMS, AND
CORRECTIVE ACTIONS

A jobsite standard Nonconformance Control System, Corrective Action System, and Deficiency Trending System will be used to correct nonconforming work, identify generic problems, and accomplish remedial or corrective action. A description of these systems follows:

- o The basic Nonconformance Control System will be established in the ZPM and implemented utilizing CG&E's, Bechtel's, S&L's, GE's, and contractors' procedures. These procedures implement a standard nonconformance form with standard data entries. Computer sorts will be used to track the status of nonconformances through verification and closeout.
- o The Corrective Action System will be documented in CG&E's, Bechtel's, S&L's, GE's, and contractors' implementing procedures. This system will assure that deficiencies identified in audit findings, CARs, and MCARs are corrected. Corrective action will be verified by QA personnel. For significant conditions adverse to quality, the corrective

action will identify the cause and document the action taken to prevent recurrence. This cause will be checked against known generic problems to determine if they are recurring. Nonconformances will be screened for significant deficiencies, and where necessary, corrective action requests will be initiated. Potentially reportable deficiencies will be reviewed according to the criteria established in 10 CFR 50.55(e) and 10 CFR Part 21 and as documented in CG&E's, Bechtel's, S&L's, GE's, and contractors' procedures. Any reportable conditions will be reported to the NRC by CG&E, as licensee, or its contractors, if appropriate. Existing lists of 50.55(e) conditions will serve as reference tools to determine if previously reported conditions are recurring.

- o The Deficiency Trending System requires review of applicable nonconformances for deficiency trends and the need for corrective action. If corrective action is required for significant trends, it will be identified on standard forms and tracked through completion and verification. Trend reports will be developed and submitted through Bechtel to CG&E management. These reports will provide CG&E

management visibility of the Zimmer QA Program's status and adequacy; the reports will also identify the status of generic problems. Trend Reports, NCR Punchlists, and Open-Item Lists serve as tracking mechanisms to assure that problems are corrected in a timely, effective manner.

3.12 GENERAL MANAGEMENT PROGRAM RESULTS

Implementation of the General Management Program Elements, outlined in Section 3.0, that are required for the continuation of construction of safety-related work, will result in:

- o Providing an integrated, comprehensive management system to assure that the procedures are configured to the commitments and policies established for CCP. Implementation will also provide substantially upgraded procedures to integrate, coordinate, and control the activities of all organizations.
- o Ensuring that any quality-related concerns are brought to the attention of the proper level in the project organization without fear of reprisal.

- o Identifying the remaining work so that it can be properly planned, controlled, and completed.
- o Adding a Project Data Base to maintain project information and an integrated planning and scheduling process.
- o Initiating comprehensive management reports that provide the required visibility of essential information to all levels of management.
- o Implementing additional controls for project elements such as budgets, plans, schedules, manpower, costs, finances, and accounting.
- o Centralizing the management of documents and records, identifying controlled documents in a document register, and distributing controlled documents and revisions in accordance with the Construction Master Distribution Schedule.
- o Timely and accurate distribution of documents to stick files and work packages to assure that construction work is planned and performed in accordance with the most recent issue of design documents.

- o Timely reproduction and turnaround of documents required for construction.
- o Complete and accurate files containing current documents and all outstanding changes.
- o Providing personnel training programs, with particular emphasis on the quality requirements of Zimmer.
- o Improving the management and control of training.
- o Training of personnel in their specialized areas with particular emphasis on management and supervisory training.
- o Increasing the level of knowledge and competency of personnel associated with the CCP.
- o Ensuring that past generic problems are identified, corrective actions implemented, and that such actions are effective.
- o Providing improved means to identify future generic problems, track trends, and ensure timely corrective actions.

4.0 QA PROGRAM ELEMENTS

NOTE: THIS SECTION DOES NOT APPLY TO THE INDEPENDENT AUDITOR PERFORMING THE AUDITING OF THE QA/QC ASPECTS OF THE CCP. AS PREVIOUSLY STATED IN SECTION 1.1 THE INDEPENDENT AUDITOR OF THE PVQC WILL ALSO AUDIT THE QA/QC ASPECTS OF THE CCP SUCH THAT ALL QA/QC ACTIVITIES THROUGH COMPLETION OF THE PLANT ARE SUBJECT TO INDEPENDENT AUDIT. THE "PROTOCOL GOVERNING COMMUNICATIONS BETWEEN CG&E AND INDEPENDENT ORGANIZATIONS CONDUCTING REVIEWS OR AUDITS UNDER THE COMMISSION'S ORDER" AS PRESCRIBED BY THE NRC WILL BE UTILIZED TO ENSURE AN "ARM'S LENGTH" RELATIONSHIP BETWEEN CG&E, BECHTEL, AND THE INDEPENDENT AUDITOR.

4.1 PROGRAM OVERVIEW

4.1.1 Program Hierarchy

All CCP quality-affecting activities shall be performed in accordance with QA programs approved by CG&E. These programs implement the criteria of 10 CFR 50, Appendix B, ANSI N45.2, as endorsed by Regulatory Guide 1.28, Rev 2 and amended by FSAR, Appendix C, and other applicable regulatory requirements.

The CCP QA program also implements Chapter 17.1 of the Zimmer Final Safety Analysis Report (FSAR) and the commitments in the Course of Action (COA), as follows:

- o Chapter 17.1 of the FSAR provides the overall commitments which CG&E, Bechtel, and contractors are implementing to meet Appendix B to 10 CFR 50, and other regulatory requirements (ANSI N45.2, as endorsed by Regulatory Guide 1.28, Rev 2 and amended by FSAR, Appendix C, and applicable regulatory guides).
- o CG&E has established in the PQAM the project policy direction which CG&E, Bechtel, and contractors will implement in their programs and implementing procedures.
- o Bechtel's NQAM provides programmatic requirements which Bechtel must include in its implementing procedures to perform its quality-related tasks and further delineates requirements for other implementing organizations.
- o The ZPM provides standard project procedures regarding nonconformance control, training,

audits, and other processes which each implementing organization (CG&E, Bechtel, S&L, GE, and contractors) must use in providing further details in their implementing procedures as required.

- o Project implementing procedures provide the detailed descriptions of the work activities and the responsible personnel for performing all quality-related tasks.

4.1.2 Key Program Controls

The following key controls are being implemented at all levels of the program prior to continuation of construction:

- o Documented descriptions of the duties and authorities of all organizations and groups performing activities affecting quality.
- o Prerequisite qualification training of project personnel performing activities affecting quality. Inspection and audit personnel qualified and certified as required by applicable codes and standards.

- o Adequate detailed procedures providing for implementation of activities affecting quality.
- o Project procedures for reviewing and documenting potentially reportable conditions.
- o Qualified procedures and personnel for controlling applicable special processes.
- o Standard nonconformance reporting and processing system.
- o Standard corrective action programs which assure implementation of appropriate and timely corrective action for significant conditions adverse to quality.
- o Management information systems to permit assessment of the adequacy and effectiveness of quality programs.
- o Standard audit procedures and reporting practices to assure thorough and effective coverage of quality-related activities.

4.2 PROGRAM REVIEW AND APPROVAL

CG&E reviews and approves the QA programs for contractors, Bechtel, S&L and GE. As Project Director, Bechtel will be responsible for assuring implementation of the QA programs of S&L, GE, and contractors. Bechtel reviews, requests changes as required, and recommends acceptance to CG&E of S&L's, GE's, and contractors' QA programs. In addition, Bechtel reviews and recommends changes, as necessary, to CG&E's QA Program. CG&E approves Bechtel's QA Program implementing procedures and Bechtel approves contractors', S&L's and GE's QA Program implementing procedures.

4.3 DIVISION OF RESPONSIBILITY

The assignment of responsibility between organizations participating in the total quality program for Zimmer has been established in the Division of Responsibility (DOR) (See Appendix 1). Responsibilities are further described in QA program manuals. A summary of responsibilities follows.

4.3.1 CG&E

CG&E has described its QA Program responsibilities and those of other implementing organizations in its

PQAM. CG&E has overall responsibility for QA activities at Zimmer from an owner-licensee overview standpoint. These responsibilities are depicted in the DOR. Procedures will describe the overall interface responsibilities of the various CG&E internal organizations and other project organizations. CG&E has the authority to direct specific actions to strengthen the contractor's QA programs at all levels.

4.3.2 Bechtel

Bechtel has described the QA responsibilities of its various departments in its Nuclear QA Manual (NQAM). Bechtel has responsibility for:

- o Management of S&L, GE, and all contractors performing activities in accordance with the CG&E approved QA Program.
- o Conducting its own activities in accordance with approved procedures.
- o Review of the QA Program policy manuals of S&L, GE, and all contractors, making recommendations to CG&E regarding approval.

Bechtel approves S&L's, GE's and contractors' implementing procedures.

4.3.3 S&L

As the Architect/Engineer, S&L has described the QA responsibilities of its various organizations in the S&L Quality Assurance Manual (QAM). S&L has the responsibility for performing its design activities at Zimmer in accordance with its QAM and implementing procedures. These procedures are approved by Bechtel prior to use during the continuation of construction.

4.3.4 Other Organizations

The Nuclear Steam Supply System (NSSS) supplier, GE, and all contractors will implement their quality responsibilities as appropriate to their scope of work and assigned activities in accordance with policy manuals and site procedures approved by Bechtel.

4.4 MAJOR PROGRAM ELEMENTS

The CCP QA Program provides the necessary provisions in the implementing organizations' manuals and

procedures to comply with each of the applicable elements of Appendix B to 10 CFR 50.

The program is described in detail in Chapter 17.1 of the FSAR and the other program documents listed in Section 4.1.

The following elements characterize the CCP QA program at each level:

4.4.1 Procedures

Implementing procedures will include elements such as the following:

- o Mandatory requirements and, where feasible, standardized formats for the administrative and operational QA/QC controls and reporting mechanisms.
- o Controls for such activities as NCRs, CARs, MCARs, training, qualification, certification, trending, and reporting.
- o Controls for operations such as installation, inspection, testing, storage and handling, material issue, auditing, and surveillance.

- o Basic requirements of the project QA Program in terms of witness and hold points, checklists, and standards of compliance.
- o Details of internal activities and controls necessary to ensure compliance to QA Program requirements by others.
- o Provisions for approval by Bechtel's QA organization of Bechtel's, S&L's, GE's, and contractor's quality-related procedures prior to their implementation.

4.4.2 Training and Qualification

The coordination and management of all site indoctrination, training, and qualification is included in a comprehensive training plan for Zimmer as described in Section 3.8. This plan, as it relates to the QA Program, includes items such as the following:

- o General project indoctrination and training to provide an overall knowledge of the project QA Program to ensure that personnel performing quality-related activities are cognizant of

the total project commitments and the programmatic requirements.

- o Training programs established by each CCP QA organization to ensure proper personnel training in the requirements of the CCP procedures and their own detailed procedures.
- o Qualification of inspection, surveillance, and audit personnel in accordance with applicable NRC regulatory guide commitments listed in FSAR, Appendix C.
- o Qualification of personnel performing special processes such as welding and NDE in accordance with applicable codes, standards, and programmatic requirements such as Society of Nondestructive Testing TC-1A, and The American Society of Mechanical Engineers (ASME) Section IX.

4.4.3 Inspection

Inspections shall be performed according to approved procedures and checklists. Each organization

performing safety-related work activities shall provide QA/QC surveillance and monitoring of those work activities. Inspection shall be performed by personnel qualified and certified in accordance with ANSI N45.2.6 as endorsed by Regulatory Guide 1.58, Rev 1 and amended by FSAR, Appendix C.

The following further describes the Inspection Program:

- o As the responsible construction organization on the project, Bechtel performs verification inspections of its construction activities according to specification and procedure requirements.
- o Bechtel performs surveillance and overview inspections of S&L's, GE's, and contractors' work to determine, from an adequate sample of work activities, that CCP work is accomplished according to documented requirements.
- o CG&E performs random surveillance and redundant inspections of overall project activities to assure that all project entities are complying with their QA programs.

- o Inspection procedures and checklists contain or reference the acceptance criteria, witness and hold points, and indicate inspections required.

4.4.4 Nonconformance Reporting

A standard jobsite Nonconformance Reporting System is being implemented. This system includes a standard nonconformance form, proper disposition of nonconformances, and the tracking and statusing of NCRs through the entire lifecycle of the nonconformance. (See Appendix 10.)

4.4.5 Audit Program

The Project Audit Program includes audits to assess the effectiveness of the Project QA Program. The overall Project Audit Program will be implemented, in part, by each QA organization.

Audits of all quality-related activities will be performed according to a Project Master Audit Plan. This plan will cover the 18 criteria of Appendix B to 10 CFR 50, Appendix B, and other program requirements as follows:

- o Audit plans and schedules will be consistent with the size and complexity of the audit units and will consider the results of outside audits and items identified by the Corrective Action Program.
- o CG&E will conduct audits to assess the adequacy and implementation of the QA programs.
- o Bechtel will conduct audits of itself, S&L, GE, and contractors under its direction to verify compliance with QA Program requirements.
- o S&L, GE, and contractors will audit their activities in a manner similar to Bechtel.
- o All audits will be performed according to approved procedures and checklists.
- o Auditors will be qualified and certified to ANSI N45.2.23 as endorsed by Regulatory Guide 1.146, Rev 0.
- o Audit findings will be followed up to assure adequate closeout.

- o Audits conducted by CG&E, Bechtel, S&L, GE, and contractors will provide for immediate reporting of nonconformances, noncompliance and other deficiencies to Quality Program requirements and identify remedial corrective action(s) necessary to preclude recurrence of noncompliance conditions.
- o The Audit Program will include periodic verification that the criteria of the working level quality-related procedures conform to the FSAR commitments and the ZPM. Audit emphasis will be placed, as a minimum, on Training Programs, Corrective Action Programs, Document Control Programs, and Inspection Program activities.
- o Audit Plans and Schedules assure that all aspects of the Project QA Program are audited at least annually or during the life of the activity, whichever is shorter.
- o Audit Reports will be distributed to management up to the CG&E Vice Presidential level. The Audit Program will include criteria to assure timely responses to the Audit Finding Report.

4.4.6 Monitoring and Surveillance

CG&E and Bechtel will conduct preplanned and selective monitoring and surveillance of their internal programs and contractor program activities to provide an added level of assurance of compliance with QA program implementation. These monitoring activities will be conducted on selected construction activities and will be documented according to approved procedures. Special emphasis will be placed on known generic problem areas which have been identified in generic deficiency reports.

4.4.7 Stop Work

The CG&E Assistant Vice President for QA and the CG&E Manager, Quality Assurance Department have the authority and responsibility to stop nonconforming activities and the further processing of deficient materials or items. They have been assigned the authority and have organizational freedom from direct pressures of cost/schedule necessary to fulfill their responsibilities with no conflict of interest.

The Zimmer Stop Work procedures further allow for limited stop work authority as assigned by the

Manager - Quality Assurance Department for inspection personnel on the specific task or activity being inspected in accordance with project procedures. Supervisors and directors may then stop work on an entire task or activity based upon evaluation of the inspector's findings.

Stop work authority for other construction related organizations is provided in the Bechtel program and procedures.

4.4.8 Corrective Action and Deficiency Trending Program

A separate group in CG&E's Quality Assurance Department has been established to perform evaluation, tracking, and trend analysis of deficiencies and corrective action.

An overall Corrective Action Program will be implemented by all organizations to: 1) identify and document conditions adverse to quality, 2) correct significant conditions adverse to quality to preclude recurrence, 3) report to the NRC significant conditions reportable in accordance with 10 CFR 50.55(e) and 10 CFR Part 21, and 4) to identify and correct generic problems.

The program is summarized as follows:

- o The tracking and control of corrective actions for conditions adverse to quality will be effected by the use of corrective action documents such as CARs and MCARs.
- o Corrective action forms provide for the documentation of the deficiency, the identification of its cause, and the corrective action to preclude recurrence.
- o These documents are issued to Bechtel and CG&E management as appropriate, and are summarized in management reports.
- o Deficiency codes will be used to assist in the computerized tracking, statusing, and trending of nonconformances and corrective action documents.

4.4.9 Management Meetings

QA Management Meetings will be conducted to maintain high visibility of the adequacy and effectiveness of the QA Program. These include:

- o Inter-organizational QA managers' meetings will be held at least once before any major multi-organizational activity starts, at least weekly during the program planning/development stages and at least monthly after the start of the activity.
- o Monthly meetings between the Senior Vice President - Nuclear Operations and his Assistant Vice Presidents will be held to discuss quality problems and program status.
- o Periodic meetings within S&L's, GE's, and contractors' organizations to review quality status.
- o Periodic meetings between CG&E Senior Vice President, Nuclear Operations and QA and Project Management of CG&E and Bechtel.
- o Periodic meetings between Bechtel and the Assistant Vice President, Nuclear Projects.
- o Verbal presentation of CG&E Annual Management Audit status to the President, CG&E.

4.4.10 QA Management Reports

QA Management Reports will be generated to provide management with an overview of significant activities, major problems, and the general visibility of the status, adequacy, and effectiveness of the QA Program. All contractors will develop internal reports and will provide summary status reports to the next higher level for input into CG&E reports. The following are typical of these reports:

- o Reports addressing the status of items such as NCRs, inspection reports, CARs, MCARs, significant audit finding reports and 50.55(e) reports to management up to the level of President, CG&E. These will also address, where appropriate, root causes and actions to preclude recurrence.
- o Executive Summary reports to upper management of the adequacy of the Quality Program implementation including open major deficiencies, trends, results of audits, and timeliness of processing and resolving deficiency documents. These shall also direct attention to areas requiring management attention.

- o Reports of trends of significant or recurring nonconformances including determinations of need for action to preclude recurrence.

4.5 CONSTRUCTION RELATED CONSIDERATIONS OF THE PROGRAM

4.5.1 QA Interface with Construction Related Activities

To assure timely implementation of the QA requirements, it is essential that the construction related activities interfacing with QA be clearly defined. The QA organizations of CG&E, Bechtel, S&L, GE, and contractors will coordinate activities with construction and maintain awareness of construction related activities by:

- o Reviewing preparation of safety-related construction work packages to assure that the applicable QA Program witness/hold points are incorporated within the work packages.
- o Surveillance of construction related activities and routine discussions between QA,

engineering, procurement, and construction personnel.

- o Frequent meetings to coordinate QA with construction related activities.
- o Establishing witness/hold points as necessary to monitor and survey construction related activities at critical points of the engineering, procurement, and construction process.

4.5.2 Tracking Construction Related Quality

The project quality organizations maintain control and keep cognizant of construction related quality by the following measures:

- o Direct inspection by Bechtel's, S&L's, GE's, and contractors' quality organization for the work performed by that organization.
- o Selected redundant inspections and surveillance of the implementation of S&L's, GE's, and contractor's quality programs by Bechtel.

- o QA audits of construction related activities.
- o QA audits, surveillances, and redundant inspections by CG&E of some of Bechtel's activities as Project Director and Constructor.
- o Audits by CG&E of all Zimmer organizations.
- o Review of NCRs, trending reports, and audit reports.
- o Review of progress and status reports.

4.6 QA PROGRAM RESULTS

The elements and benefits of the CCP QA Program include:

- o An effective quality organizational structure using appropriately trained and qualified personnel who will work from comprehensive procedures. These constitute the primary means for achieving the QA Program objectives and commitments.

- o Controls being exercised at the CG&E management level to monitor overall QA Program implementation and advise CG&E top management of the status and adequacy of the program.
- o Effective management support of the QA Program and clear management communications.
- o Coordination of QA and construction activities.
- o An accurate verification of the quality of the work.

5.0 ENGINEERING PROGRAM ELEMENTS

5.1 GENERAL

The purpose of the Engineering Program is to provide a system for overall management and control of the engineering process for the CCP. Each responsible design engineering organization will control its internal documentation; compliance with codes, standards, and regulatory commitments; the quality and design criteria of its work; and all other aspects of its engineering and design process. The activities of design engineering organizations related to the CCP will be managed by Bechtel as the Project Director.

The Engineering Program will be developed so that:

- o Codes, standards, regulatory, and other design requirements are identified and properly implemented.
- o Engineering procedures are formulated, developed, and implemented to adequately accomplish design and design control requirements.

- o Nonconformances are resolved in a manner consistent with the primary project objective of quality.
- o Engineering activities are performed in a controlled, efficient, and timely manner.
- o Design documents prepared for construction are both complete and timely, to meet project needs.
- o Configuration and design change control is maintained throughout the preparation of design documents.
- o Engineering activities are monitored and audited for quality and conformance to requirements.

These objectives will be achieved through:

- o Strengthening management of design engineering.
- o Providing improved management systems involving all project entities in the areas of configuration and design change control.

- o Providing project-wide management systems to process and disposition NCRs, including requirements for prompt action on those conditions considered reportable.
- o Preparation and monitoring of engineering work plans that identify the tasks and schedules of design engineering organizations.
- o Supplying timely reports on the engineering program, and providing regular reviews of the program to senior management.
- o Providing a significantly increased engineering staff that is commensurate with the requirements for timely support of the construction activities, including configuration and design change control. Specifically, the S&L site organization will be staffed with personnel of appropriate skill levels and authority to effectively process and approve construction related design changes.

5.2 ENGINEERING PROCEDURES

o GENERAL

The Engineering Procedures Program will provide procedures to support those engineering tasks required for continuation of construction and turnover of plant systems and documentation. These engineering-related procedures will comply with project requirements including the following:

- o Applicable codes, standards, FSAR, nuclear licensing, other regulatory requirements, and CG&E design criteria.
- o The Project Quality Program including the PQAM and NQAM.
- o Zimmer Procedures Manual (ZPM).
- o Bechtel Procedures Manual (BPM).
- o S&L Procedures.

o RESPONSIBILITIES

CG&E is responsible for:

- o Issuing the ZPM.
- o Reviewing and approving the Bechtel Procedures Manual (BPM).
- o Assuring that CG&E engineering activities are conducted in accordance with the approved procedures.
- o Monitoring the engineering activities of Bechtel, S&L, GE, and other design engineering organizations for compliance with project procedures.
- o Approval of design modifications as described in Section 5.3.

Bechtel engineering is responsible for:

- o Assisting in the development of the engineering portions of the ZPM.

- o Developing the engineering portions of the BPM for CG&E approval.
- o Reviewing, approving, and monitoring the implementation and control procedures of the design engineering organizations for compliance with the ZPM and BPM, including interface requirements.
- o Monitoring engineering quality criteria for compliance with required codes, regulations, standards, and overall project objectives.
- o Managing the planning and execution of the engineering work by design engineering organizations and requiring that the work be performed in accordance with project procedures and controls and in a timely manner to meet project needs.

Other design engineering organizations (S&L, GE, and others) are responsible for:

- o Reviewing and revising, as necessary, their implementation procedures for compliance and consistency with the approved ZPM and BPM, and for defining interfaces with other project organizations.

- o Revising their implementation procedures and instructions as required to strengthen their internal control.
- o Ensuring that their procedures and instructions define the quality criteria of the work within their area of responsibility.
- o Ensuring that their engineering activities, interface communications with other project organizations, and work planning are conducted in a timely manner in accordance with the approved implementation procedures and instructions.

5.3 CONFIGURATION AND DESIGN CHANGE CONTROL

o GENERAL

The primary objective of the configuration control process is to provide an effective system for tracking, retrieving, and statusing documentation and its related hardware. The process will support the completion and turnover of plant systems, preoperational testing, and startup. Tracking and

control of documentation and hardware, including changes, will be accomplished:

- o To support and manage an orderly completion of construction.
- o To support scheduled turnover of systems, subsystems, or components (SSCs) and related documents to CG&E for preoperational testing and startup in accordance with design requirements.
- o To assure that the status of constructed SSCs relative to design requirements is known in order to maintain control and assure consistency of construction with design.

The primary objective of the design change control process is to control the decisions and actions related to design changes. The approval of changes will be based on engineering evaluation of their impact on the project's quality, technical, and operational objectives and criteria. Actions taken will be properly controlled and documented from inception through implementation.

During construction completion and turnover of systems to CG&E, and during preoperational testing

and startup, strict configuration and design change management will be enforced. As Project Director, Bechtel will be responsible for management of the Configuration Control, Design Change Control, and Turnover Programs. As part of this management responsibility, Bechtel will make recommendations to CG&E for engineering staffing levels which will be commensurate with the schedule requirements.

o CONFIGURATION CONTROL

Configuration control is the process for ensuring that the configuration (documentation and hardware) of the plant is known and traceable at all times and that the design, construction, and startup system scoping documents are consistent. Configuration control will be ensured by implementing required design, construction, startup, and quality procedures. The Project Data Base (PDB) will be used as a communication and reference tool for identifying configuration status and will provide the tool by which design drawings and documents, design revisions, nonconformance reports, and other related quality documents will be tracked and cross-referenced to hardware identities such as system, structure or component. Those entities

responsible for the origin or revision of the data will maintain the data current and accurate for use by engineering, PVQC, construction, construction testing/turnover, and CG&E preoperational testing and startup. Exception reports for management will provide an overview of key activities and will display trends of potential emerging problems, such as changes delayed in processing, or dispositioning, and as-built drawing backlogs.

o DESIGN CHANGE CONTROL

Changes can originate from new design requirements, dispositioning of nonconformances, and the process of implementing the remaining design requirements. Revisions to the design documents and constructor requested design changes will be subject to the same review and approval authority as the original design.

The control of proposed changes to design documents is achieved using the following basic processes.

- o Project Change Requests (PCRs) - Major changes shall be proposed, documented, and controlled using PCRs. These constitute changes in design criteria, or changes which require

either the addition or modification of a piece of equipment, or affect basic system performance and/or functional logic, or change essential requirements, or change configuration of structures. All other changes are considered minor. (See DDCN below.) A PCR can be initiated by any cognizant project entity and will be submitted to S&L for conceptual evaluation, with a copy to CG&E. This conceptual evaluation will include a review of the technical and quality requirements and the resulting project impact. The results of the conceptual evaluation will be reviewed for concurrence by Bechtel and approved by CG&E. After approval, the responsible design organizations will proceed with detailed design and required document revisions. GE will review and evaluate those changes which have potential effect on the NSSS. (See Appendix 11.) Construction is not authorized to proceed until detailed design has been completed and approved, except as specified in CG&E approved procedures.

- o Design Document Change Notices (DDCNs) - Minor changes shall be proposed, documented, and

controlled using DDCNs. These constitute all other changes which are not classified as major changes (PCRs). A DDCN may be initiated by any cognizant project entity and will be submitted to S&L for determination that the change is properly the subject of a DDCN and does not require a PCR, and for review/approval. The associated design documents will be revised when required. GE will review and evaluate those changes having potential effect on the NSSS. Construction is not authorized to proceed until detailed design has been completed and approved, except as specified in CG&E approved procedures.

- o Design Change Packages (DCPs) - In order to facilitate implementation of late changes and to maintain configuration control, CG&E, with a recommendation from Bechtel, will institute the Design Change Package Program as the system turnover date approaches. The DCP will contain all documents and data required for the complete change and will provide the basis for the associated construction work package(s). Generally, those changes which will potentially impact, or be impacted by, the turnover schedule will be packaged into a DCP. CG&E and Bechtel will review the change

to determine when it should be performed and whether the change should be packaged as a DCP or processed as a normal change. At CG&E's option, installation of the change may be deferred beyond turnover. Configuration control is assured as design documents are issued with the Design Change Package. To support this process, related data is maintained on the PDB. These control techniques have been successfully used on other projects and are a primary tool in the overall Configuration and Change Control Program. (See Appendix 11.)

- o Field Disposition Instructions (FDIs) and Field Deviation Disposition Requests (FDDR) - FDIs are initiated by GE (home office) and FDDRs are issued by GE (field). They are used to document proposed changes affecting the NSSS systems. The proposed changes will be integrated in the project change control system as a part of the PCR or DDCN process, depending on the nature of the change.

5.4 NONCONFORMANCE DISPOSITION PROCESS

A single, project-wide procedure will control and document nonconformances. This procedure will require NCRs to be dispositioned as REWORK, REJECT, REPAIR, or USE-AS-IS.

REPAIR and USE-AS-IS dispositions require approval by the responsible engineering organization. Approved dispositions will require either a design change or a determination that the as-constructed condition meets design requirements. Unapproved dispositions will be returned to the originating organization.

REWORK and REJECT dispositions shall be provided by the cognizant field engineering organization with disposition concurrence provided by their designated quality entity. The cognizant field engineering organization may also recommend REPAIR and USE-AS-IS dispositions to the responsible engineering organization for approval.

Nonconformance disposition analyses will be documented in accordance with project procedures. NCRs will also be reviewed for potential reportability as required by 10 CFR 50.55(e) and

10 CFR Part 21. NCRs dispositioned by the responsible engineering organization will be monitored by Bechtel. Bechtel may require reconsideration of the disposition by the responsible design engineer.

Dispositions requiring rework or repair in accordance with design requirements will be directed to the responsible construction organization in accordance with project procedures. (See Appendix 10 for an overview of the NCR process.)

5.5. CONTROL OF ENGINEERING SPECIFICATIONS AND DRAWINGS

Project procedures define the responsibilities for the control of the project engineering design specifications and drawings. They address the transfer of documents from the responsible engineering organization to the Constructor and contractors, engineering reviews and approvals, the control of engineering documents during systems completion, and as-built drawings.

CG&E will oversee the process of control of engineering specifications and drawings.

As Project Director, Bechtel is responsible for managing the following engineering activities, with all engineering and design organizations responsible for implementation of the requirements delineated:

o ENGINEERING DOCUMENT FLOW

The engineering document flow process requirements and responsibilities for the interfaces between CG&E, Bechtel, S&L, and contractors will be managed by Bechtel. Procedures covering the review and approval process, flow and distribution of design and supplier documents and construction aids will require that the most recent applicable design information is available for use by the project in a controlled manner. The Project Data Base will reference the effective revisions of the document.

o ENGINEERING REVIEWS

The review and approval of document revision and updating will be performed in accordance with project procedures. This process, under Bechtel surveillance, will require that approved changes are incorporated into the basic design documents, and

that system, structure, or component (SSC) configuration is in conformance with design drawings and specifications.

The primary objectives of the review and approval process of design documents, procedures, and supplier documents will be quality and conformance to project requirements.

The procedure for the preparation of design documents, including reviews and approvals, will provide the basis for Bechtel surveillance and audits and will require conformance to applicable codes, standards, FSAR, and regulatory requirements.

o DESIGN COMPLETION AND SYSTEM TURNOVER INTERFACE

During design completion and system turnover, Bechtel will monitor the remaining engineering work for completeness and timely close out of design and documentation activities. As turnover of a SSC approaches, Bechtel will perform a detailed review of open engineering items and require corrective actions if appropriate.

5.6 ENGINEERING PROGRAM RESULTS

The overall Engineering Program for the Continuation of Construction Plan (Section 5.0) will result in improvements in:

- o Configuration and design change control.
- o Resolution of NCRs through a process that requires documentation of engineering decisions.
- o Performance of the administrative aspects of engineering in a controlled manner.
- o Design control of engineering documents from design criteria through implementation.
- o Completion of design, final documentation of design, and turnover of documents to CG&E in the as-built configuration.

6.0 PROCUREMENT AND MATERIAL CONTROL PROGRAM ELEMENTS

o GENERAL

Procurement includes requisitioning, purchasing, expediting (onsite and in the manufacturer's shop), source surveillance and audits, warehousing (receiving, receipt inspection, storage, maintenance, issue, material control), and related interfacing functions (construction equipment, tool control, preventative maintenance).

Material control consists of systems and processes used to control and track material, including inventory management.

Installed components and materials for safety-related systems will be supported by the proper documentation and appropriate traceability. The processes used to purchase and control these items, both before shipment and after they arrive on the site, will be controlled and monitored as necessary to ensure conformance by all organizations and individuals. All procurement and material control functions will be implemented in accordance with the program described hereinafter and as shown in Appendix 12.

o PURPOSE

The purpose of this program is to assure that material acquisition, receipt, storage and issue processes that meet the requirements for nuclear power plant construction and operation are in place prior to the performance of related activities in the CCP.

o RESPONSIBILITIES

CG&E will manage the overall procurement functions and perform procurement services.

Bechtel, as Project Director, will manage construction and S&L, GE and contractor/subcontractor procurement services, perform procurement services as requested by CG&E, review the existing purchase and material control program(s), and assure that necessary program changes are implemented.

Contractors will perform procurement services as required by contract/subcontract or as requested by CG&E.

S&L will provide technical and quality support to procurement functions, including review of vendor documents and the preparation of technical and quality documents required to purchase and control items.

6.1 PROCEDURES

Existing procurement-related procedures and methods are being reviewed by Bechtel to determine adequacy. These procedures will be modified or replaced, as required, by the responsible organization, to ensure that an adequate program is implemented. New or modified procedures will be approved by the responsible organization's (i.e., CG&E's, Bechtel's, S&L's, GE's, or contractors') technical and QA/QC functions. Final approval will be obtained from Bechtel and/or CG&E, as required, including technical and QA/QC review. Procedures will be issued and training/instruction given to all participating and interfacing organizations and individuals before program implementation.

6.2 ONHAND MATERIALS

The PVQC will review the documentation of safety-related equipment and material in storage to determine whether the purchased material meets the

requirements of the design drawings, specifications, and documentation requirements. As defined in the PVQC Program, where the purchase documentation reviews indicate the material on hand meets the requirements, material will be inspected or tested as appropriate to confirm the documentation is correct.

The physical item will be reviewed against the applicable documents to determine if the onhand materials are acceptable. If the physical item is in good condition, appropriately traceable, obtained from an acceptable source, and supported with the proper documentation, the item will be so identified in accordance with the applicable procedure. This entire process will be performed under the project Quality Program.

Questionable items (items which may or may not be acceptable) will be identified and segregated in accordance with project procedures. Unacceptable items will be identified with a clearly identifiable marking and processed as required. Segregation in storage will be provided to minimize inadvertent issue. Suitable inside and outside hold areas will be established, clearly identified, and controlled by QA/QC. ASME items will be separated from non-ASME items.

6.3 INVENTORY CONTROL

Present inventory control systems will be reviewed to determine the adequacy of control and information on file. The system will be modified or replaced, as approved by CG&E, to assure data quality and timeliness are obtained and controlled. After implementation of system improvements, the material status from Section 6.2 will be entered into the system.

Past information from the original system is being reviewed and, upon determination of accuracy, will be entered into the inventory control system for historical purposes. Past records will be retained in inactive storage for historical purposes.

6.4 STORAGE AND ISSUE OF MATERIAL

Storage methods and facilities are being reviewed to determine their adequacy in providing segregated, controlled storage which is environmentally suitable for the type of items stored. Issue methods will be reviewed to determine if issue is controlled satisfactorily by the installing and warehousing organization and to assure that the proper item is issued for the desired installation. Procedures are being modified or added to assure that proper

storage and issuance is occurring at each location. Facilities will be modified or added to provide proper storage.

6.5 IDENTIFICATION OF MATERIAL NEEDED (SHORTAGE LISTS)

Existing CG&E, S&L, HJK, and contractor reports and lists are being reviewed to identify required materials and equipment, including presently identified repair or replacement items. A list of remaining materials required (material status report) is being developed. The inventory developed pursuant to the qualifications activity in PVQC and the resultant disposition of the material, combined with the list of remaining material requirements, will be used to develop lists of items needed for an adequate inventory. (See Section 6.2.)

6.6 IDENTIFICATION OF REQUIREMENTS AND COMPLETION OF REQUISITIONS

Upon determination of the need for an item for permanent plant installation, including calibrated tools, the installing or designing organization prepares a requisition with supporting

specifications, drawings, shop inspection requirements, documentation requirements, and receipt inspection requirements. Originating engineering and QA/QC organizations review the requisition, as appropriate, for conformance to engineering specification and quality requirements.

Preparation of requisitions will be performed and/or monitored by Bechtel. This review includes technical and QA/QC reviews to assure the item being requested is correct and to the proper quality class. All requisitions determined to be incorrect will be returned to the originator, corrected, and subjected to the same approvals as the original.

Bechtel monitors the preparation program(s) and prescribes corrective action to assure that organizations initiating requisitions completely incorporate the technical and quality requirements.

6.7 PURCHASING

Purchasing gives final approval of the requisition after review for accuracy and completeness, check of the existing inventory, and rate of usage. Questions are resolved through Engineering and Quality

organizations as appropriate. If changes to the requisition are required, it will be returned to the originator and subjected to the same approvals as the original. After all questions are resolved, purchasing will proceed.

Upon receipt of quotations, purchasing will obtain engineering, QA/QC, and construction review as necessary to ensure the item being purchased meets technical and quality requirements. When the evaluation process is complete, purchasing will prepare the purchase order for award and obtain QA/QC approval, as required, before placement of the order.

Vendors supplying material, components, equipment, or services for safety related SSCs will have a QA program which has been reviewed and approved by CG&E and will be audited and surveyed by CG&E or the contractor responsible for the activity. Objective evidence of qualification by an independent organization (i.e., ASME certification or audit report from CASE) may be accepted in lieu of the qualification survey, but does not relieve the requirement for audits during performance of the

activity. Qualification of vendors will be in accordance with the requirements of ANSI N45.2.13 and Regulatory Guide 1.123.

Bechtel will monitor the purchasing process to assure that appropriate procedures are followed.

6.8 SOURCE SURVEILLANCE AND AUDITS

The need for source surveillance and audits will be determined to assure that the item is supplied to project requirements. This determination will be based on QA technical, documentation and schedule requirements, and manufacturing capability and performance. Criteria for source surveillance and audits will be based upon the technical needs of the project, typical standards for similar items, and manufacturer performance.

Inspection and witness points will be established and documented for the activities being performed by vendors commensurate with the degree of complexity and the importance to safety of the item or service being provided. Inspections or surveillances will be performed at these times by qualified personnel from CG&E or organizations acting as agents for CG&E.

Requisitions and purchase orders will include source surveillance and audit requirements requested by engineering and reviewed by QA. Source surveillance and audits are being performed by organizations and individuals qualified to perform the service. Appropriate surveillance and audit reports are being sent to the applicable project organization. Audits of this program will be performed by QA.

As Project Director, Bechtel monitors this program to verify conformance to the criteria established, the qualifications of personnel, and that the program achieves the desired results.

6.9 EXPEDITING

All requisitions and purchase orders are assigned a site need-date. Expeditors ensure that items and associated required documentation arrive in accordance with committed shipment dates and/or with project site need-dates. Expeditors expedite internal and external organizations and individuals as necessary until the item(s) are received at the project. This may include expediting of the design, requisitioning, purchasing, manufacturing, and shipping.

Expediter's input to and prioritize their activities using the material status report and other schedule-indicating documents. A Procurement Critical Items Report will be published indicating schedule and work activity impacting items and will be distributed to all project organizations for information and action as appropriate.

6.10 RECEIVING AND RECEIPT INSPECTION

Three types of acceptance criteria will be developed for use. They are commercial criteria by procurement, technical criteria by engineering, and quality criteria by engineering and QA/QC.

Procurement performs commercial and technical inspection as required to ascertain that the item received is what was purchased, that it was manufactured in accordance with industry standards acceptable to the project, and that no damage was incurred in transit or handling. If required, engineering assists in the technical inspection.

QA/QC performs technical and quality inspections for safety-related items, including a review of the

documentation and a comparison of the documentation to the physical item. If necessary, assistance will be obtained from engineering.

All safety-related items will be inspected including unique identifications, examination of heat numbers, heat codes, part or catalog numbers, nameplate data and tags to assure that all items received are properly identified and traceable.

Handling during receipt will be in accordance with handling instructions developed from the manufacturer's recommendations, engineering requirements, and industry practice.

Upon receipt, items are placed in a receiving area, stored to the proper level, with safety-related items removed only upon release by QA/QC. Items may be stored in other appropriate areas if properly identified regarding their receipt inspection status.

If during the receiving process an item cannot be accepted because of missing documentation or a nonconforming condition, the item is tagged on QA/QC hold and moved to the hold area, if necessary, to preclude its inadvertent use.

6.11 STORAGE AND WAREHOUSING

A site system for material control is being established to control all material, equipment, and components during warehousing, transfer, and installation. CG&E monitors compliance with this program by all site organizations. This program provides for identification and traceability of the item to the installation and certification documents for the item and to the purchase order or vendor in accordance with requirements.

Items will be stored in accordance with engineering requirements, the proper levels of housekeeping, fire protection, and security and segregated to the extent necessary to preclude inadvertent issue. Hold areas will be established for controlled storage of items and location identification established for all inside and outside stored items to accurately locate items for inventory control purposes. QA/QC monitors storage of safety-related materials and items identified as nonconforming during the storage process are tagged by QA/QC and moved to a hold area, as necessary, to preclude inadvertent use. Items on

hold can be released only by QA/QC. Items requiring separation during storage are separated under a controlled procedure with QA/QC surveillance. A controlled process is used to ensure required identification is maintained when material is divided.

6.12 MATERIAL ISSUE

Materials will be issued only upon receipt of a properly and completely filled out withdrawal slip. All withdrawal slips must contain the signature and construction organization of the person requesting the item(s) and approval of the engineer responsible for the work. Withdrawal slips must also contain the following information as a minimum: quantity desired, size and description, material composition and grade, quality class, location where material is to be installed, and system and location to which the item is to be delivered. Identification to the associated work package is included where required.

Upon receipt of the withdrawal slip at the storage area, the item is issued only after the withdrawal slip is reviewed for adequacy and accuracy and approved by warehouse supervision.

Issue personnel will obtain the item from inventory, transcribe unique identifications such as heat number or code to the withdrawal slip, and sign it. The person receiving the item also signs the withdrawal slip.

In instances where upgrading of material for use in safety-related applications is determined to be required, material is inspected and tested, in accordance with an approved upgraded program, meeting the requirements of ANSI N45.2.13, to confirm the acceptability of material for the application. The upgrade of such material in a safety-related application will be approved by CG&E QA to ensure that a proper level of control has been established.

The construction organization to whom safety-related material is issued is responsible for identification and control of the material from issue through installation, in accordance with appropriately approved procedures which are compatible and consistent with the centralized standard material identification and control system.

QA/QC monitors the Issue Program on safety-related items.

6.13 PROCUREMENT AND MATERIAL CONTROL PROGRAM RESULTS

The Procurement and Material Control Program will result in:

- o Effective procurement procedures and controls.
- o A controlled Requisitioning and Purchasing Program.
- o Purchase sources that are qualified and monitored.
- o Proper receipt, storage, and issue control.
- o Attention to schedules and priorities.
- o Traceability of safety-related items to the point of origin.

7.0 CONSTRUCTION PROGRAM ELEMENTS

The Construction Program is designed to ensure that Zimmer is built in accordance with the applicable codes and regulations, NRC regulatory guides and standards, drawings, and specifications. Programs covered by this portion of the CCP include: Construction Procedures Program, the Work Package Program, the Welding Program, the Construction Testing Program, the Preoperation Turnover Program, the Post-Turnover Control Program, and a Pilot Program for checkout of organizations, programs, and procedures prior to restart of safety-related work.

7.1 CONSTRUCTION PROCEDURES PROGRAM

Administrative and construction procedures will be developed for each major work activity (e.g., work package control, pipe hanger installation, weld inspection) assuring that programmatic and technical requirements are incorporated. (See Appendix 13.) Procedures will be developed in accordance with the Zimmer Procedures Manual (ZPM) and the Bechtel Procedures Manual (BPM).

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The Construction Program is designed to ensure that Zimmer is built in accordance with the applicable codes and regulations, NRC regulatory guides and standards, drawings, and specifications. Programs covered by this portion of the CCP include: Construction Procedures Program, the Work Package Program, the Welding Program, the Construction Testing Program, the Preoperation Turnover Program, the Post-Turnover Control Program, and a Pilot Program for checkout of organizations, programs, and procedures prior to restart of safety-related work.

7.1 CONSTRUCTION PROCEDURES PROGRAM

Administrative and construction procedures will be developed for each major work activity (e.g., work package control, pipe hanger installation, weld inspection) assuring that programmatic and technical requirements are incorporated. (See Appendix 13.) Procedures will be developed in accordance with the Zimmer Procedures Manual (ZPM) and the Bechtel Procedures Manual (BPM).

7.1.1 Administration

The Construction Procedures Program as required by the ZPM and the BPM will be administered by Bechtel. These procedures will be developed and approved by CG&E, Bechtel, S&L, GE, and contractors as required. The procedures will be approved by Bechtel, the cognizant quality organizations and, if required, CG&E, S&L, and GE. As Project Director, Bechtel will review, surveil, and audit the implementation of these procedures to verify that the procedures meet the applicable requirements.

7.1.2 Construction Work Procedures

Construction work procedures are being developed based on the requirements of the ZPM, BPM, Quality Program, applicable S&L design requirements, good construction practice, and the requirements of codes and standards. These procedures are used to perform and control the remaining activities on the project.

The types of construction work procedures required include general work procedures, specific work procedures (by discipline, commodity, or work operation), and special process procedures.

Examples of construction work procedures are: pipe installation, hanger installation, electric cable installation, equipment alignment, and hydrostatic testing.

7.2 PVQC INTERFACE

The PVQC process will identify work which must be accomplished during the continuation of construction, including incomplete work and work identified as a result of nonconforming conditions.

Construction of a system, subsystem, or area is controlled to ensure that construction does not interfere with or preempt the conduct of the PVQC or implementation of potential rework on systems or areas for which verification has not been completed. These controls include measures such as identification of specific items which are subject only to construction activities, identification of specific items which are not subject to construction activities, and where appropriate, identification of specific items which should not be used for physical support of construction personnel or otherwise contacted physically. These controls also provide for specific training of construction personnel in the above restrictions and surveillance of

construction personnel to assure compliance with the above restrictions. Should it become necessary, the controls may include restricting access of construction personnel to certain sectors of the plant.

Specific controls of the interface with PVQC consist of the following:

- o Continuous interfacing of PVQC and CCP personnel to determine current status and priorities.
- o Frequent meetings to coordinate interface activities of PVQC and CCP personnel.
- o Utilizing integrated PVQC and CCP schedules reflecting the work plans of each group.
- o PVQC releasing specific portions of CCP work based on evaluation and conclusion that they will not interfere with PVQC activities. This release will be based on appropriate evaluations to assure that the determination has been made in a controlled manner.

If a generic deficiency is identified after construction has resumed on certain systems,

subsystems or areas, its applicability to construction on such systems, subsystems, or areas will be determined. If the generic deficiency is determined to be applicable, CG&E takes whatever action may be necessary, up to and including a stop work order, to identify and segregate existing items that may be deficient and to prevent propagation of additional deficiencies in new construction pending determination of appropriate corrective action. CG&E promptly informs the NRC of the existence of any such generic deficiency and the actions taken in response to its discovery.

As described in the PVQC, individuals assigned to perform PVQC under the Project Director, Bechtel, are dedicated full time to the PVQC and will have no other responsibility. Furthermore, Bechtel as the Project Director has structured its organization to provide for separate management of activities under the PVQC and the CCP. In short, sufficient manpower and management resources are being devoted to the execution of both the PVQC and the CCP to ensure that each receives the degree of attention necessary for each program's successful execution.

7.3 WORK PACKAGE PROGRAM

The Work Package Program is the primary method for controlling both safety-related and nonsafety-related construction to assure that specified units of work are completed in conformance with the latest applicable procedures, drawings, and specifications. Work packages also help control the required inspections and associated documentation and provide a basis for scheduling work.

Work packages will be kept current with the most recent applicable information and/or documents. Bechtel will prepare and monitor the Work Package Program for its work and will monitor the preparation and implementation of the Work Package Program of contractors so that procedural requirements are enforced and the program is controlled. A flow diagram of the process for preparing work packages is detailed in Appendix 14.

7.3.1 Definition and Scope

All work defined in Section 3.4 is divided into discrete items for the purpose of planning and performing remaining project work efficiently. A work package is prepared consisting of information required to complete the work item. It also assists

in assuring that the necessary inspections and documents are completed. Sections 7.3.2 through 7.3.6 describe activities performed during the development of the work package. Section 7.3.7 describes how the work package is used in the construction process.

The scope of a work package varies by SSC and plant area. For some SSCs or areas, the work package scope is an individual component such as a single large pipe hanger, piece of equipment, or concrete placement. In some instances, the work package scope is a group of components such as all small pipe, fittings, and supports associated with a small pipe isometric or a group of terminations in a certain panel. In other cases, it will reflect a defined scope of work in a certain area such as coating application in the drywell or all of the conduit in a certain area. The scope of a work package can vary due to differences in complexity, criticality, PVQC interface constraints, or requirements to assign work to several crews. Bechtel is establishing work package guidelines by discipline and commodity.

7.3.2 Drawings, Specifications, and Initial Work Package Development

Work package development is started as soon as remaining work is identified, as described in Section 3.4. Work package development and implementation is being based on the PVQC, construction, and test schedules. (See Appendix 14.)

For each work package, a checklist is completed in accordance with applicable procedures. The checklist defines requirements for the work package including the quality classification, special instructions, testing requirements, material availability, and list of documents included in the package. The current applicable revision of the required documents (drawings, DDCNs, DCPs, NCRs, etc) is placed in a work package. Any special precautions or restrictions pertaining to the work, such as those required by PVQC, will be included in the work package.

In addition to the work package procedures, specific guidelines will be developed on a commodity-by-commodity basis to provide assistance to work package assemblers regarding possible interface problems and potential situations that should be checked during constructability reviews.

An initial evaluation of planned work is performed by personnel familiar with the plant area in question to identify potential problems and special requirements.

Existing work packages will be reviewed by Bechtel prior to their use to assure that they possess all the necessary CCP attributes.

7.3.3 Material Requirements and Availability

Material requirements and availability are determined during work package development. Requisitions are prepared to obtain material not on order or available on site. In general, work packages are not released until all required material is identified and available. Exceptions can be made if major portions of the work package can be completed pending receipt of required material. Material will be purchased, received, and issued as described in Section 6.0.

7.3.4 Welding Requirements

During preparation of work packages requiring welding, the welding engineers determine the welding requirements from the current design documents. The welding engineers identify and prepare the necessary welding instructions. The instructions will specify

requirements such as the weld procedure; preweld and postweld heat treatments; filler material requirements; and inspection requirements. These documents are placed in the work package. The work package is reviewed by QA/QC and/or other entities such as the Authorized Nuclear Inspector (ANI), as required, for the establishment of witness or hold points.

Pertinent weld documents are retained in the work package during construction. Work package preparation, inprocess work, filler material control, and associated documentation will be under the surveillance of Bechtel's welding engineers and QC personnel. (See Section 7.5 for more information on welding.)

7.3.5 QC Instructions, Inspection Requirements, and Hold Points

Quality-related work packages are reviewed by the originator's QC organization. QC prepares, using input from others, a Construction Inspection Plan including or referencing quality control instructions, inspection requirements, inspection records, and hold points. The plan will be developed in accordance with the QC Program and work package procedural requirements.

Witness and hold points are established by the Contractor and as appropriate, the AI, the ANI, Bechtel, and CG&E to ensure that inprocess inspections are performed as required. Witness points are points in the work process at which the contractor must advise the applicable field engineering, QC organizations, and ANI (if required) that the witness point has been reached, so that they may witness the subsequent work operations. The contractor may proceed with work following notification. Hold points are critical points in the work process at which the contractor must notify the applicable field engineering, QC organizations, and ANI (if required), that the hold point has been reached, so that they can witness the operation or conduct an inspection. The contractor may not proceed past the hold point without written permission of the organization which established the hold point.

Incorporation or referencing of quality-related documents into work packages is accomplished by QC and field engineering personnel. Indoctrination, training, qualification, and certification, as required, of project personnel preparing work packages will be accomplished prior to the start of work package preparation.

7.3.6 Work Package PVQC Interface

Work packages will not be issued unless PVQC concurs that the work as described in the work package will not interfere with or preempt the conduct of the PVQC or potential rework. (See Section 7.2 for further information on the methods to be used to control the PVQC interface.)

7.3.7 Construction Process

o RELEASE FOR CONSTRUCTION

When the preparation of the work package has been completed, including a final check of the package to ensure that all required documents are included and current, it is released for construction. The status of the work package will be entered into the Project Data Base. When a controlled document is revised, all work packages containing a copy of the revised document will be updated with the most recent applicable revision and change information.

o CONSTRUCTABILITY REVIEW

After receipt of the work package, the work element will be reviewed or walked down by the field engineer, supervisor, or craft foreman, for

constructability. If the work package is satisfactory, it is then scheduled by the constructing organization for implementation. If it is unsatisfactory, field engineering/supervision returns the package to the originator with problems identified in writing.

o SCHEDULE THE WORK PACKAGE

Because each work element is completely identified within a work package; constructability, material availability, equipment requirements, area craft density, manning, scheduling, and statusing can be determined prior to the start of the work. The work activity is scheduled in accordance with the Level III Schedules for overall project requirements. Day-to-day coordination and planning is accomplished through the Level IV Schedules and the area coordinators. (See Section 3.5 for additional information on scheduling.) The schedule information is entered into the Project Data Base.

o ASSIGN WORK CREWS

Work crews will be assigned by the contractor's craft supervisor after verifying that the crew personnel have been trained, qualified, and certified as

required to perform the work defined in the work package. QA/QC will oversee and monitor the assignment of work crews to assure that the work is assigned to properly trained, qualified, and certified personnel. CG&E and Bechtel also monitor this process. (See Section 3.8 for more information on training.)

o EXECUTE-PERFORM WORK

Work is accomplished by the contractors and Bechtel, as the Constructor. As the Project Director, Bechtel will provide overall management of the work while being monitored by CG&E. Organizations assign personnel as required to support the System Teams. (See Section 2.0 for description of System Teams.) These teams are accountable for the work. Witness and hold points identified in the work package assist in assuring that in-process inspections are accomplished as required. The work status is be entered into the Project Data Base.

o QC INSPECTION

QC inspections are performed and documented by trained, qualified, and certified QC personnel. Witness and hold points are established prior to

the start of work to ensure that required inprocess inspections are performed.

QC inspections, designed to ensure that the work is accomplished in accordance with the project requirements, are performed by the contractor responsible for the activity. Surveillance, monitoring, and auditing of CCP activities will be performed by Bechtel's QA/QC personnel. Additional surveillance, redundant inspections, monitoring, and auditing will be performed by CG&E QA/QC personnel. The status of QC inspections are entered into the Project Data Base.

o FINAL ACCEPTANCE OF WORK

The field engineer determines that the work was completed by examination of the work against current, applicable drawings and documents. If the work is not in accordance with requirements, it is returned to supervision for rework and subsequent reinspection.

When the work is judged acceptable, field engineering notifies QC that the work is ready for final inspection.

QC personnel inspect and accept or reject the work, using the current drawings and documentation. Each

contractor involved in CCP is be responsible for the necessary inspections, testing, and process controls, including QC acceptance of their installations and activities. Upon acceptance by the contractor, Bechtel's QC personnel are notified as required.

Bechtel QA/QC personnel notify the responsible contractor of any deficiencies and/or deviations found during their inspections. CG&E QA/QC personnel finding deficiencies and/or deviations during their inspections notify the appropriate Bechtel supervisor. The notified responsible CCP contractor documents and corrects the deficiencies and deviations in accordance with CCP requirements and notify CG&E and Bechtel QA/QC personnel when corrections are completed. CG&E, Bechtel, and contractor QA/QC personnel verify the corrections as required. The status of the work package is entered into the Project Data Base.

o WORK PACKAGE CLOSEOUT

After construction completion and satisfactory completion of all QC inspections and documentation, the contractor transmits all quality documents to Bechtel for review, acceptance, and storage in accordance with the applicable procedures. (See

Section 3.7.2.) Nonquality documents are retained as required by the contractor, Bechtel, and CG&E.

7.4 NONSAFETY-RELATED WORK

The construction program for nonsafety-related work has the same basic construction controls as safety-related work. Although nonsafety-related work will not be accomplished under the strict QA/QC requirements for safety-related work, the requisite quality will be issued through measures such as:

- o Work packages developed and reviewed for acceptability to the required codes and standards applicable to nonsafety-related work.
- o Acceptance of work documented by field engineering, with an overview by Bechtel.
- o Special requirements may dictate involvement by QA/QC and in such cases, the special requirements will be documented.
- o As defined in the CG&E FSAR, certain nonsafety-related systems important to safety, such as fire protection, have been selected for inclusion in the QA Program.

- o CG&E monitoring and field engineering walkdowns of the nonsafety-related SSCs will be conducted the same as for safety-related SSCs.
- o Additional QA coverage for nonsafety-related SSCs important to plant operation may be specified by CG&E.

Nonsafety-related work is evaluated by PVQC prior to release to the field to assure that performance of this work will not interfere with the PVQC program. (See Section 7.2.)

7.5 WELDING PROGRAM

The Welding Program is being structured to ensure compliance with all requirements of the applicable codes and standards. Particular attention is being given to weld procedure qualification, filler material control and traceability, welder and inspector qualification, weld documentation, and inspection. Witness points, hold points, inspections, monitoring of the welding, and audits are employed to ensure compliance to procedures. Bechtel prepares procedures for its own work and as Project Director, Bechtel will review, rewrite (if

necessary), and approve contractors' applicable procedures. Qualification of procedures will be accomplished in accordance with applicable codes. CG&E, Bechtel and contractor personnel will be trained, qualified, and certified as required. Weld requirements are identified and documented in the work package, and approved as described in Section 7.3.4. Qualified welders will make welds using controlled weld filler material and in accordance with qualified procedures. Welds will be inspected by field engineering and QC personnel.

Completed weld documentation is transmitted as described for quality documents in Section 7.3.7 under Work Package Closeout.

Bechtel, as the Constructor, S&L, GE, and contractors are individually responsible for:

- o Procurement of properly qualified and certified weld filler material.
- o Preparing and qualifying welding procedures.
- o Procedural training, qualification, and certification of welders.

- o Maintaining welder qualifications.
- o Filler material control.
- o Performing the work using the current approved procedure and welders qualified to the procedures.
- o Training and certifying QC personnel.
- o Required inspections.
- o Notifying the responsible inspection organizations when work progresses to a witness or hold point.
- o Preparing and maintaining weld documentation.
- o Coordinating and directing nondestructive examinations (NDE).
- o Certifying personnel performing NDE.
- o Reviewing/approving nondestructive examination (NDE) results.
- o Documenting repairs.

- o Documenting base material weld repairs.
- o Statusing the Project Data Base.

As Project Director, Bechtel is responsible for:

- o Reviewing and approving all site welding procedures.
- o Detailed QA/QC surveillance, monitoring, and auditing of all welding activities described above.
- o Selective redundant inspections.

CG&E overviews the entire process including surveillance, audits, and selective redundant inspections.

7.5.1 Procedures

All welding and NDE procedures are being reviewed prior to implementation of the Welding Program, and approved by Bechtel and the responsible engineering organization. Existing procedures are being rewritten, by Bechtel, GE, and contractors, as required. Procedures requiring qualification will be

qualified by Bechtel, GE, and contractors in accordance with applicable codes. CG&E and Bechtel monitor the process of qualifying welding procedures.

The procedures will cover but not be limited to:

- o Weld processes.
- o Procedural training of welders, welding engineers and QA/QC personnel.
- o Welder qualification and testing.
- o Control of weld filler material including purchasing, handling, and issuing.
- o Preparation and maintenance of inprocess welding records.
- o NDE processes and procedures.
- o Qualification of NDE procedures.
- o Certification of NDE personnel and maintenance of qualifications.

- o Postweld heat treatment.
- o General administration of welding program.

The procedures require that welding activities be inspected to verify that the work is in accordance with applicable drawings, specifications, and procedures.

7.5.2 Training

S&L, GE, contractor and Bechtel personnel will be trained in accordance with the program detailed in Section 3.8. Welding engineers and QC personnel will be trained, qualified, and certified, as required, on specific work procedures, requirements, and inspections prior to performing CCP work. Crafts will be trained to procedural and specific requirements. This training is under the overall surveillance of Bechtel.

7.5.3 Qualification and Testing

Welders will be qualified by physical welding tests for specific welding procedures and the tests conducted by qualified personnel and managed by Bechtel. The physical welding tests are to be

witnessed as required by Bechtel's qualified welding personnel.

The PDB will contain the current status of all welding procedures, individual welder qualifications, and personnel training records. The PDB will assist in assuring that:

- o Only properly qualified and approved procedures are used.
- o Welder testing and qualification is performed by qualified personnel.
- o Only properly trained, qualified, and certified personnel are allowed to weld.
- o Training, qualification, and certification, as required, is current.

7.6 CONTRACT ADMINISTRATION

CG&E administers all aspects of its contract with Bechtel. As Project Director, Bechtel will administer CG&E's contracts with S&L, GE, and contractors pertaining to CCP activities and such other tasks as may be designated by CG&E. These

contracts will be administered in accordance with the project procedures. Bechtel coordinates and performs selective inspections, reviews, and audits of the work of S&L, GE, and contractors to ascertain that such work complies with applicable regulatory and contractual requirements. CG&E retains responsibility for administration of the commercial aspects of the contracts.

Bechtel, S&L, GE, and contractors are responsible for the administration and control of their subcontracts in compliance with applicable provisions of their contracts with CG&E.

7.7 CONSTRUCTION TESTING PROGRAM

Construction testing consists of a series of tests and verifications performed by construction on installed SSCs prior to preoperation turnover of the SSCs to CG&E.

o RESPONSIBILITIES

CG&E has overall responsibility for the conduct and administration of the overall testing program. As Project Director, Bechtel is responsible for:

- o Performing a comprehensive review of the present project construction test procedures and acceptance criteria and those prerequisite test procedures and acceptance criteria designated by CG&E, submitting to CG&E any recommendations.
- o Performing a comprehensive review of previously completed construction testing activities.
- o Identifying the construction tests and associated procedures required for each system, structure, or component for CG&E's approval.
- o Developing and maintaining the overall schedule and reviewing/approving the detailed schedules for the construction tests.
- o Reviewing and providing for CG&E's approval construction test procedures as requested by CG&E.
- o Managing the performance of mechanical, electrical, and instrumentation construction tests.

- o Providing CG&E reasonable advance notice of performance of all construction tests so the CG&E Representatives may be present. Tests with designated hold points shall not be performed until the CG&E Representative is present.
- o Reviewing and recommending CG&E approval of construction test results.
- o Resolving all testing-related deficiencies expeditiously.
- o Coordinating the jurisdictional transfer (system turnover) of the plant systems to CG&E.

The contractors and CG&E are each responsible for preparing procedures, training test personnel, scheduling, performing tests, documenting tests, statusing the PDB, and preparing requirements as appropriate for their individual work scopes.

o TESTING REQUIREMENTS

A comprehensive review of construction testing requirements is being conducted. This review includes the testing requirements of CG&E, Bechtel,

S&L, contractors, the Zimmer Final Safety Analysis Report (FSAR), and the Nuclear Regulatory Commission (NRC).

Specific requirements to be evaluated for inclusion in the construction testing program include:

- o SSCs requiring testing.
- o Tests to be performed on each SSC.
- o Acceptance criteria for each test.
- o Evaluation and documentation of test results.
- o Qualifications of test personnel.
- o Quality involvement.
- o System scope documentation.
- o Administrative and test procedures.
- o Measurement and test equipment program.
- o Safety precautions.

o PREVIOUS CONSTRUCTION TESTING

After requirements of the Construction Testing Program have been determined, a comprehensive review of previously completed construction testing activities will be conducted to determine their acceptability. As appropriate, this review includes:

- o Construction test procedures used.
- o Qualifications of test personnel.
- o Measurement and test equipment program.
- o Evaluation and documentation/retention of results.
- o Proper performance and completeness of the tests.
- o Quality involvement.
- o Effect of post-testing SSC history on the integrity of the test results (e.g., construction and design changes, equipment maintenance, and operational status).

- o Effect on the integrity of the test results for systems turned back to construction.
- o Action required to render the remainder acceptable.
- o CONSTRUCTION TESTING PROCEDURES
 - o Construction testing procedures will be written by either the performing organization or by Bechtel.

In either case, CG&E has final approval authority over procedures, to assure that they meet all requirements.

o CONSTRUCTION TESTING PERFORMANCE

Construction tests will be performed and documented by Bechtel, contractors, or CG&E. Bechtel will manage and monitor all construction testing. The safety-related construction tests are inspected, witnessed, and audited by the appropriate quality organizations and other organizations, as required by the test procedure or Quality Program.

7.8 PREOPERATIONAL TURNOVER PROGRAM

o GENERAL

The Preoperational Turnover Program defines the responsibilities and procedures for turnover of the project systems, structures, or components (SSCs). Preoperational turnover is defined as the process of transferring the SSC jurisdiction from Bechtel to CG&E. An SSC will be turned over to CG&E as complete as possible following the guidelines set forth in the requirements for preoperational turnover of a SSC. Procurement, installation, and QC documentation is not transferred to CG&E at the time of turnover, but is verified as complete and available for review. The transfer of jurisdiction from Bechtel to CG&E occurs when the preoperational turnover is accepted by CG&E.

CG&E is responsible for the following:

- o Scoping startup systems.
- o Reviewing and dispositioning DCPs.
- o Accepting or rejecting the preoperational turnover from the construction organization.

- o Administering the jurisdictional tagging, safety tagging, and the clearance program for post-turnover work.

As Project Director, Bechtel is responsible for managing:

- o The completion of installation and construction testing.
- o The orderly turnover of systems.
- o The assembling of preoperational turnover packages.
- o The documentation of exceptions.
- o The completion of turnover exception work.
- o Concurrence with readiness for turnover.
- o The appropriate jurisdictional tagging of SSCs prior to preoperational turnover.
- o TURNOVER UNIT SCOPE

The scope of each testable turnover unit is provided by CG&E on marked-up drawings describing the turnover

unit boundaries and components. Bechtel reviews and make recommendations on scoped drawings. The scope of each nontestable unit (facility) will consist of a detailed turnover unit description and identification numbers.

Bechtel manages the compilation of detailed turnover scope drawings, lists, and tabulations developed from the scoping drawings provided by CG&E.

o CONSTRUCTION COMPLETION

SSC completion and turnover is being planned in accordance with the turnover schedule. Once the scope of the SSC has been defined, completion progress will be monitored and controlled as follows:

- o The CCP System Team prepares a discipline worklist, schedules are prepared, and construction completed.
- o As the system turnover date approaches, design changes will be controlled through the use of design change packages (DCPS). The DCPs will be forwarded to CG&E to determine when the design changes will be completed.

- o As the system turnover date comes closer, the System Team issues a detailed list of outstanding items and conducts an initial system walkdown with CG&E. New items are included on the list of outstanding items and the items are scheduled for completion.

- o Just prior to the scheduled turnover, the System Team and CG&E personnel conduct a final system walkdown of the turnover unit. Each open item is reviewed to determine whether it will be completed prior to turnover. A list of the items to be completed after turnover is prepared and included as part of the turnover package.

- o PREOPERATIONAL TURNOVER

When the installation and construction testing is complete, a notice of completion is prepared, reviewed by QC and QA (for safety-related, Seismic I and ASME, Section III, items only), and sent to CG&E. The procurement and installation inspection documents are certified to be complete and available for review.

Acceptance of an SSC turnover is indicated by CG&E's written notification. After acceptance of the SSC, CG&E implements the jurisdictional tagging procedure to adequately identify items within the turnover boundary.

After acceptance, CG&E assumes sole responsibility for preoperational testing, operations, and maintenance of the SSC. No work is performed on the SSC unless it is approved and controlled by CG&E.

o FINAL DOCUMENT TURNOVER

After the completion of the preoperational turnover of SSCs and the close out of open items, the final document/record turnover transfers all remaining documents/records to CG&E.

7.9 POST-TURNOVER CONTROL PROGRAM

o GENERAL

The Post-Turnover Control Program controls how work is accomplished and completed after SSCs have been turned over to CG&E. This program ensures that no work is undertaken on turned-over SSCs unless properly authorized by CG&E. Retesting of work previously tested is performed as necessary.

In some cases a SSC may be accepted by CG&E with work items remaining. These items will be designated on a list of incomplete work included in the turnover package. Other work may result from corrective maintenance or repairs needed after turnover. Work may also result from design modifications determined during preoperational testing, from engineering changes, and from new NRC requirements. Corrective maintenance and repairs are to be accomplished under the cognizance of the CG&E organization that has jurisdiction over the system. These design changes are controlled using a design change package from S&L which will receive management review before implementing changes. Completion of items from the incomplete worklist and any additional work is scheduled and assigned, as required, by CG&E.

o METHOD OF IMPLEMENTATION

Work after turnover can be accomplished in one of the following ways:

- o A contractor can perform work on the turned-over SSCs as requested by CG&E on a Zimmer work request form. The construction contractor, in this case, is responsible for the execution of the work, including

engineering, procurement, as requested, construction testing, QC, supervision, and crafts. CG&E is responsible for the scheduling, safety tagging, and work authorization systems.

- o Work on turned-over SSCs can be accomplished by CG&E.
- o Contractors can furnish crafts and associated supervision to CG&E as requested. All functions other than craft supervision and the furnishing of crafts is the responsibility of CG&E.

7.10 PILOT PROGRAM FOR FIELD CHECKOUT OF
SAFETY-RELATED WORK

o GENERAL

A Pilot Program will be used to confirm that elements of the CCP have been properly conceived, that procedures are adequate, and that personnel are properly trained, qualified, and certified as required.

Representative nonsafety-related SSC work from each major discipline will be selected as considered

necessary and clearance given by PVQC prior to starting the work to ensure that the nonsafety-related work does not interfere with PVQC.

Prior to the commencement of each Pilot Program, the CCP major elements, programs, and procedures will be reviewed and a list developed and approved of those elements required as prerequisites to commencing each specific Pilot Program. All CCP elements are not applicable to each Pilot Program. Procedures will be written, training performed, work packages prepared, construction performed, and inspections and documentation completed as if the work were safety-related. Bechtel's and contractor's, field engineering, design engineering, QA and QC personnel perform as if the Pilot Program were being applied to safety-related work. An analysis of problems encountered will be made and changes implemented as required, to assure that the same problems do not occur on the safety-related systems.

7.11 PREVENTIVE MAINTENANCE PROGRAM

A Preventive Maintenance Program is being established to ensure that all plant SSCs are maintained and preserved at a level commensurate with their importance to safety and in an acceptable manner. Preventive maintenance requirements are established

by the CG&E Engineering Department. Prior to preoperational turnover of SSCs, preventive maintenance will be the responsibility of the Constructor and carried out in accordance with the program requirements as defined by CG&E engineering. Post-operational turnover preventive maintenance will be the responsibility of the Nuclear Production Department, which may directly perform the required maintenance or may delegate the physical work to a contractor under a Work Request Program. Responsibility for configuration control of SSCs rigidly maintained by the entity responsible as defined by the preoperational turnover process.

7.12 CONSTRUCTION PROGRAM RESULTS

The construction programs (outlined in Section 7.0) required for the continuation of construction of safety-related work will result in:

- o Effective administrative, managerial, and technical procedures for construction activities.
- o Establishment of a control system to ensure that the PVQC and construction interface is precisely defined and controlled.

- o Institution of a Work Package Program that provides an effective means for scheduling completion work, controlling work quality, and controlling the PVQC interface.
- o An improved Welding Program that provides control of all welding functions, updated welding procedures including procedure qualification, assurance that only properly qualified welders perform welding, controlled welder training and qualification, and improved document control.
- o Effective management of contracts in accordance with regulatory and contractual requirements and project procedures.
- o A clear definition of construction testing requirements and needs, controlled test procedures, complete control of test implementation, and assurance that quality verification of testing is performed.
- o A Turnover Program that will ensure an orderly turnover of jurisdiction from construction to CG&E and a Post-Turnover Program that will provide complete system work control.

- o Use of a Pilot Program to demonstrate the viability of the CCP exists by performing initial construction activities on nonsafety-related systems.

- o An effective Preventive Maintenance Program that will maintain and preserve all SSCs in accordance with the applicable requirements.

8.0 IMPLEMENTATION OF CCP

A simplified flowchart showing the major steps required to perform safety-related work is shown in Appendix 15. The major steps of the process as detailed on the flowchart are described below:

- o Prior to the start of safety-related work, certain major prerequisites, as required to support the scope of work, must be in place and functioning. Appendix 15 lists some of the major prerequisites and the section of this document in which they are addressed.
- o The preparation of design drawings, specifications, and other design documents is accomplished as described in Section 5.0. The design engineer's QA/QC organizations monitor and audit the design engineering activities.
- o The remaining work is identified as described in Section 3.4. After the remaining work has been identified, it is divided into discrete items of work, and work packages are prepared as described in Sections 7.3 through 7.6.

The contractor's QC organization and the Authorized Nuclear Inspector provide input, as required, into the work package. (See Section 7.3.5 for further details.)

- o Requisitions for equipment and materials not yet purchased are prepared. The equipment or materials are purchased, inspected, received, stored, and issued for use as described in Section 6.0. The purchaser's QC personnel will inspect the material upon receipt.
- o After preparation of the work packages, satisfactory completion of the Pilot Program (Section 7.10), and the approval of the NRC to proceed with safety-related work (Section 3.1), the work package will be issued and work will proceed as described in Section 7.3.7. The performance of the work will be inspected by QC as described in Section 4.0.
- o Upon completion of the construction work, construction testing will be accomplished as described in Section 7.7. Construction tests will be witnessed and inspected by QC or properly qualified and certified test engineers, as applicable.

- o After satisfactory completion of the construction and construction testing, the SSC will be jurisdictionally transferred from Bechtel to CG&E, as described in Section 7.8. Work after turnover will be accomplished as described in Section 7.9.

- o Quality records for turned-over SSCs are transferred to CG&E. Nonquality records are retained, as required by CG&E. (See Section 3.7.)

Bechtel's, S&L's, GE's, and each contractor's QA organization audits and monitors the entire work process including the:

- o Preparation of work packages.

- o Completion of work as defined by work package.

- o Construction testing.

- o SSC turnover to CG&E.

- o Post-turnover work.

- o Turnover of records to vault.
- o Performance of QC.

As Project Director, Bechtel manages, audits, and monitors all activities performed by S&L, Bechtel, and contractors.

CG&E manages Bechtel and monitors the entire project, including audits and surveillances as necessary.

The organization as described in Section 2.0, the CCP major elements as described in Section 3.0 through 7.0, and the implementation of these elements will result in an effective and controlled continuation of construction assuring that work is completed in accordance with applicable requirements.

9.0 SCHEDULE FOR CCP

As Project Director, Bechtel is developing and maintaining an integrated schedule for completion of the project. A milestone schedule based on the current forecast dates has been developed. (See following page.) It identifies milestone dates for completing prerequisites, starting, and completing the Continuation of Construction Plan (CCP) work.

CCP IMPLEMENTATION SCHEDULE

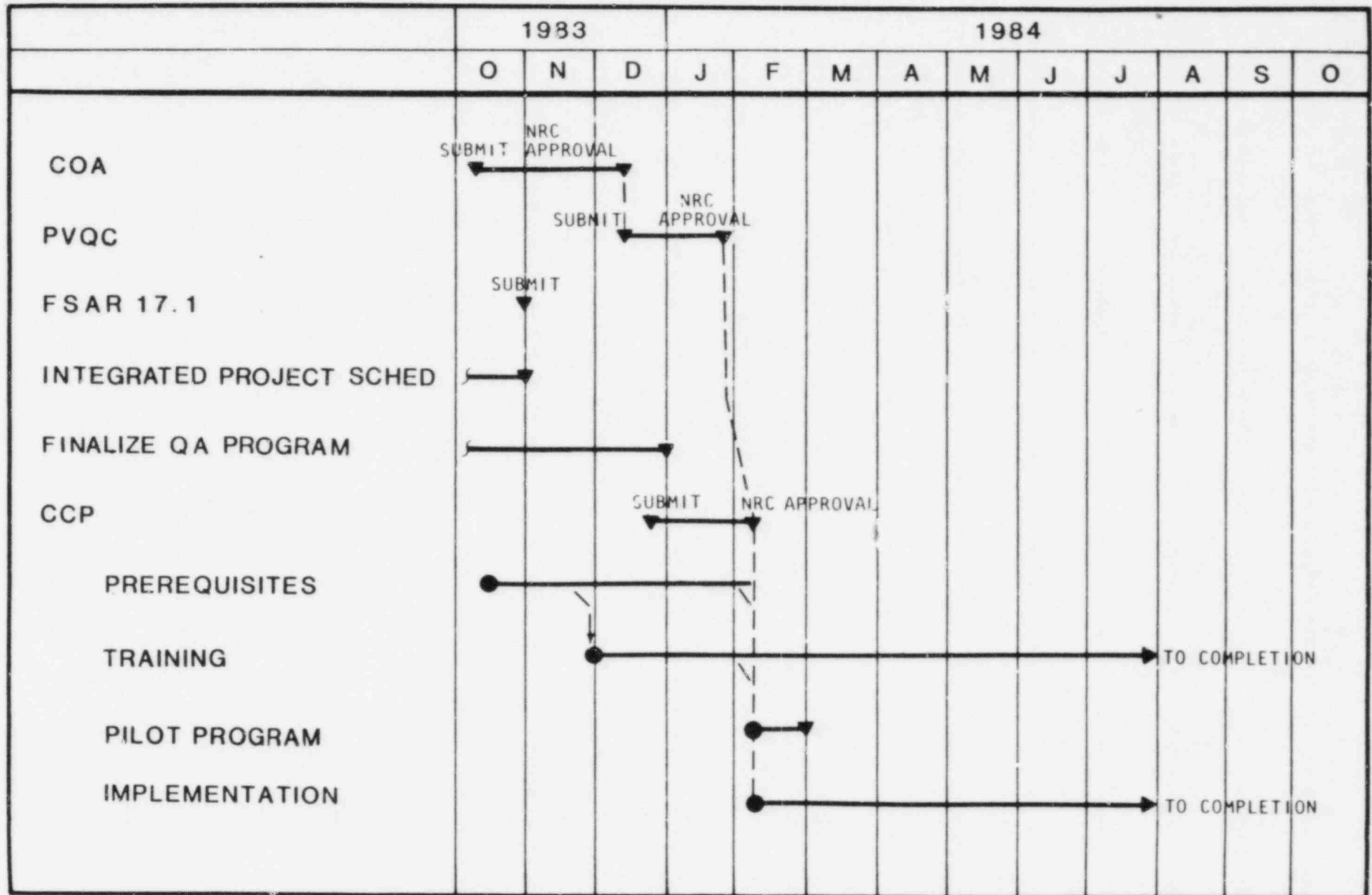


TABLE 3

9/26/83
12/16/83 Rev. 0
Page 1

DIVISION OF RESPONSIBILITIES FOR PVQC AND CCP

I. MANAGEMENT SERVICES

NO.	ITEM OF WORK DESCRIPTION	RESPONSIBLE ORGANIZATION				
		CG&E	BECHTEL	H/K	ARCHITECT- ENGINEER	NS&S SUPPLIER
1	Engineering and construction performance	Monitor Bechtel, approve major decisions	Manage and Construct	Provide limited services for ASME work	Provide Engineering	Provide Engineering
2	Coordination of engineering, procurement, construction contracting	Monitor	Perform	Accept Direction	Accept Direction	Accept
3		Perform & Manage	Administer assigned contracts & perform inspections	Administer assigned contracts	Administer assigned contracts	None
4	Project Procedure Manual for Bechtel	Approve	Prepare & Manage, Comply	Comply	Review and comment as requested, comply	Review and comment as requested, comply
5	Procedures for Bechtel, H/K, A/F, contractors	Monitor	Approve, prepare, maintain & comply	Prepare, maintain, comply as appropriate	Prepare, maintain, comply	Prepare, maintain, comply
6	Project Control Systems	Approve & Monitor	Review, Recommend Modifications, revise & manage resulting system	Provide info & comply	Provide info & comply	Provide info & comply
7	Integrated schedule & cost estimate	Approve, including changes	Develop, maintain & manage	Provide info & trends	Provide info & trends	Provide info & trends
8	Detailed plans and schedules	Monitor	Provide, Approve & Manage	Provide	Provide	Provide

I. MANAGEMENT SERVICES

ITEM OF WORK		RESPONSIBLE ORGANIZATION				
NO.	DESCRIPTION	CC&F	BECHTEL	HLK	ARCHITECT-ENGINEER	NOTES
9	Progress reports including performance reports, manpower estimates, cash requirements and others as requested	Approve Monitor	Prepare & submit to CC&F, initiate or recommend corrective action	Provide info	Provide info	Provide info
10	Reporting cost and schedule progress	Provide info	Direct, provide info, provide reports to organizations	Provide info.	Provide info	Provide info
11	Cost & schedule studies & evaluations	Monitor	Prepare, direct & approve	Provide info and prepare	Provide info and prepare	Provide info and prepare
12	Payments under all CC&F's contracts	Perform	Verify	None	None	None
13	Project cost ledgers as required by CC&F	Audit all	Maintain	Maintain	Maintain	Maintain
14	Records Management System	Approve & accept	Review, recommend, establish, & maintain, turn-over to CC&F	Deliver required documents	Deliver required documents	Deliver required documents
15	Project acceptance	Perform	Recommend to CC&F	None	Recommend to Bechtel	Recommend Bechtel
16	Advise organizations of Bechtel's role in project	Perform	None	None	None	None
17	Project change control program	Approve	Review, recommend modifications & maintain program	Provide info & comply	Provide info & comply	Provide info and comply
18	Office facilities and other services	Provide	Recommend to CC&F & Manage	Recommend to Bechtel	Recommend to Bechtel	Recommend to Bechtel

11. PVQC

ITEM OF WORK		RESPONSIBLE ORGANIZATION				
NO.	DESCRIPTION	CG&E	BECHTEL	HJK	ARCHITECT-ENGINEER	NSS'S SUPPLIER
1	Quality Confirmation Program (QCP)	Approve expansion	Recommend to CG&E any necessary change	Assist	Assist	Assist
2	Preparation of Plan for Verification of Quality Construction (PVQC)	Approve, submit to NRC	Prepare & submit to CG&E	Assist	Assist	Assist
3	Supply documentation input	Supply	Manage & Direct; Identify & Request	Supply	Supply	Supply as requested
4	Train PVQC personnel	Train own personnel	Train all personnel	Train own personnel	Train own personnel	None
5	Visual inspection	Supply personnel	Manage, direct and perform	Supply personnel to perform ASME (Sec.) 3	Supply personnel to perform	None
6	Physical inspection	Supply personnel to assist	Manage, direct & perform	Supply personnel to perform ASME (Sec.) 3	Supply personnel to perform	None
7	Documentation Reviews	Supply personnel to assist	Manage, direct & perform	Supply personnel to perform ASME (Sec.) 3	Supply personnel to perform	None
8	Status determination for conforming nonconforming and incomplete items	Review	Perform	None	None	None
9	Quality assurance audits and surveillance	Perform	Perform	Perform for activities conducted by HJK employees	Perform for activities conducted by A/E employees	None
10	PVQC report of results	Approve, submit to NRC	Prepare & submit to CG&E	Assist	Assist	Assist
11	Independent audit of PVQC	Contract for; provide requested info to auditor	Provide requested info to auditor	Provide requested info to auditor	Provide requested info to auditor	Provide requested info to auditor

DIVISION OF RESPONSIBILITIES FOR PVQC AND CCP

III. CONSTRUCTION

ITEM OF WORK		RESPONSIBLE ORGANIZATION				
NO.	DESCRIPTION	CCM	BECHTEL	HJR	ARCHITECT-ENGINEER	NECS SUPPLIER
1	Continuation of Construction Plan (CCP)	Approve, submit to NRC, monitor	Prepare, submit to CCM, manage implementation	Assist Bechtel to prepare, as requested	Assist Bechtel to prepare, comply	Assist Bechtel to prepare, comply
2	Construction	Approve major decisions, monitor	Coordinate, Manage, Perform & direct	None	Perform as directed by Bechtel	Perform as directed by Bechtel
3	Construction tests	Approve selected procedures, perform electrical tests	Identify, Review procedures, Provide QC for tests	None	Provide acceptance criteria	Provide acceptance criteria
4	Construction procedures	Monitor	Provide & approve	None	Provide & comply	Provide & comply
5	Contracting	Perform & manage	Administer & direct CCM's contracts	None	Administer assigned contracts	None
6	Procurement services	Perform & manage	Assist CCM, as required	None	Assist CCM & Bechtel	Assist CCM & Bechtel
7	Receipt inspection of permanent plant material	Monitor	Provide inspection	None	Provide requirements	Perform for N555 vendor
8	Preventive maintenance before turnover to CCM	Approve requirements, monitor performance	Perform & manage	None	Provide requirements	Provide requirements
9	Warehouse plant materials	Perform & manage	Assist as requested	None	Provide requirements	Provide requirements

DIVISION OF RESPONSIBILITIES FOR PVQC AND CCP

Page 5

III. CONSTRUCTION

NO.	ITEM OF WORK DESCRIPTION	RESPONSIBLE ORGANIZATION				
		CG&E	BECHTEL	HLK	ARCHITECT- ENGINEER	NSSS SUPPLIER
10	Procurement of construction equipment and tools	Perform & manage	Submit field purchase requisitions & purchase orders to CG&E	None	None	None
11	Labor relations	Monitor	Manage overall program as CG&E representative	None	None	None
12	Reporting cost & schedule	Monitor	Prepare	Provide input	Provide input	Provide input
13	Office services & administration	None	Provide for Bechtel needs	None	Provide for A/E needs	Provide for NSSS needs
14	Site training	Monitor	Manage & perform	None	Perform & comply	Perform comply
15	Safety Program	Approve, Comply	Prepare comply, approve, monitor	Provide & comply	Provide & comply	Provide & comply
16	Site security & work rules	Perform & Manage Site Security & Approve & Monitor Work Rules	Prepare work rules & monitor contractors & Subs for compliance	Comply	Comply	Comply
17	Field accounting for property records	Provide Records and Monitor	Perform & Manage	None	None	None
18	Preoperational test & start-up procedures	Prepare	Assist at CG&E's operation	None	Provide Test requirements	Provide Test requirements

DIVISION OF RESPONSIBILITIES FOR PQQC AND CCP

Page 6

III. CONSTRUCTION

ITEM OF WORK		RESPONSIBLE ORGANIZATION				
NO.	DESCRIPTION	CCMF	RECIPIENT	H.W.	ARCHITECT-ENGINEER	NEECS Supply the engineering assistance
19	Preoperation and start-up testing	Perform & manage	Assist CCMF & provide craft & supply as reqd	None	Provide engineering assistance	Provide engineering assistance
20	Site medical facility	Provide & monitor	Manage, direct & operate	None	None	None
21	Equipment vendor services	Monitor	Request service	None	Assist Rec'd	Assist Rec'd
22	Other services	Manage	Perform at CCMF's request	None	None	None
23	Direct hire labor services	Request	Provide as requested by CCMF	None	None	None
24	Field construction engineering	Monitor	Provide for & manage	None	Provide as required by specifications and program	Provide as required by specifications and program
25	Independent audit of CCP QA/QC activities	Provide re-quested info to auditor & comply with protocol	Provide re-quested info to auditor & comply with protocol	None	Provide re-quested info to auditor and comply with protocol	Provide re-quested info to auditor and comply with protocol

IV. QUALITY ASSURANCE/QUALITY CONTROL SERVICES

NO.	ITEM OF WORK DESCRIPTION	RESPONSIBLE ORGANIZATION				
		CG&E	WORTH	HLK	ARCHITECT- ENGINEER	NSAS SUPERVISOR
1	Responsibility	Overall QA responsibility	QA responsibility for Bechtel & other contractors	QA responsibility for HLK	QA responsibility for A/E, subs, & vendors	QA responsibility for NSAS support subs & vendors
2	Project QA Manual	Issue	Recommend necessary changes, assist CG&E in preparation	Review and comment as requested	Review and comment as requested	Review and comment as requested
3	QA Programs	Approve all	Assist CG&E in development of programs and submit its program to CG&E, maintain approved program, recommend approval of others	Submit to Bechtel, maintain approved program	Submit to Bechtel, maintain approved program	Submit to Bechtel, maintain approved program
4	QA Procedures	Develop and approve as required; audit all	Assist CG&E in development of procedures, provide, approve as required, implement, maintain procedures	Provide, approve as required, implement, maintain its procedures	Provide, approve as required, implement, maintain its procedures	Provide, approve as required, implement, maintain its procedures
5	Vendor QA Programs	Approve, audit	Review, approve, audit	None	Approve, audit the vendors	Approve, audit the vendors
6	Training of QA personnel	Provide for personnel	Provide for personnel	Provide for personnel	Provide for personnel	Provide for personnel

IV. QUALITY ASSURANCE/QUALITY CONTROL SERVICES

ITEM OF WORK		RESPONSIBLE ORGANIZATION				
NO.	DESCRIPTION	CG&E	BECHTEL	HLK	ARCHITECT-ENGINEER	N555 SUPPLIER
7	QC services including physical inspection	Monitor	Provide & manage	Provide as required	None	Provide upon vision & inspection program
8	Quality Audit access to personnel records or facilities	None	Provide to CG&E	Provide to Bechtel or CG&E	Provide to Bechtel or CG&E	Provide to Bechtel or CG&E
9	Audits & surveillance	Perform for CG&E, Bechtel, A/E and N555 supplier activities	Perform for Bechtel A/E, HLK and N555 supplier activities	Perform for HLK activities	Perform for A/E activities	Perform for N555 supplier activities
10	Trend Analyses	Perform	Perform	Perform	Perform	Perform
11	Corrective Action	Provide	Provide	Provide	Provide	Provide
12	Stop work authority	Yes, for project	Yes, for project activities within its scope	Yes, for own activities	Yes, for own activities	Yes, for own activities
13	QA Management Meetings	Preside	Attend & provide input	Attend & provide input upon request	Attend & provide input upon request	Attend & provide input upon request
14	QA Management Reports	Review	Prepare	Provide input as requested	Provide input as requested	Provide input as requested

V. FINE TUNING

RESPONSIBILITY ORGANIZATION						
NO.	DESCRIPTION	ITEM OF WORK	CCME	DECHIEF	HLK	ARCHITECT-ENGINEER
1	Major design modifications		Approve	Review and recommend to CCME	None	Recommend, design
2	Specifications for permanent plant work		Approve	Recommend approval; submit discrepancy to A/E or N555	None	Prepare, revise, recommend revisions, & submit to Bechtel
3	Specifications for non-permanent plant work		Monitor approvals	Approve/Prepare	None	None
4	Design criteria, functional schematic drawings (P&ID, electrical diagram)		Approve	Recommend approval; submit discrepancy to A/E or N555	None	Prepare, revise & submit recommended revisions to Bechtel
5	Project non-conformance program		Monitor/Approve as required	Manage/Approve disposition keeping CCME informed	None	Approve or resolve as required
6	Field design engineering		Monitor	Provide as required by specs. & program	None	Provide
7	"As Built" drawings		Monitor, approve functional schematic dwg. changes	Manage, Provide "As Built" installation dwgs & documentation dwgs & documents, Appr. manage, sub. discrep.	Provide "As Built" installation dwgs & doc for assigned scope of work, submit discrepancies	Revise drawings, to show acceptable "As Built" condition
8	Physical design drawings		Monitor approvals	Manage, Prepare and/or approve & submit to A/E	None	Prepare, revise
9	Contractor shop drawings		Monitor	Manage, Prepare and/or approve & submit to A/E	None	Prepare & submit to A/E
10	Other engineering & engineering management services		Monitor & respond	Provide as requested by	None	Provide as requested by Bechtel

V. ENGINEERING

ITEM OF WORK		RESPONSIBLE ORGANIZATION				
NO.	DESCRIPTION	CC&F	RECHTEL	H&K	ARCHITECT-ENGINEER	NGC'S SUPPLIER
11	Improve CC&F engineering capability	Perform & manage	Assist as required	None	Assist as requested	Assist as requested
12	Provide technical guidance & obtain resolution of specific design problems	Monitor	Identify problems, implement resolution	None	Provide resolutions	Assist
13	Project acceptance criteria	Provide to Rechtel	Recommend changes	None	Provide criteria	Provide criteria
14	Determine equipment & materials documentation complies with specs, P.O., contract & quality requirements	Provide documentation	Review & make determination	Provide documentation	Provide documentation	Provide documentation

DIVISION OF RESPONSIBILITIES FOR PVQC AND CCP

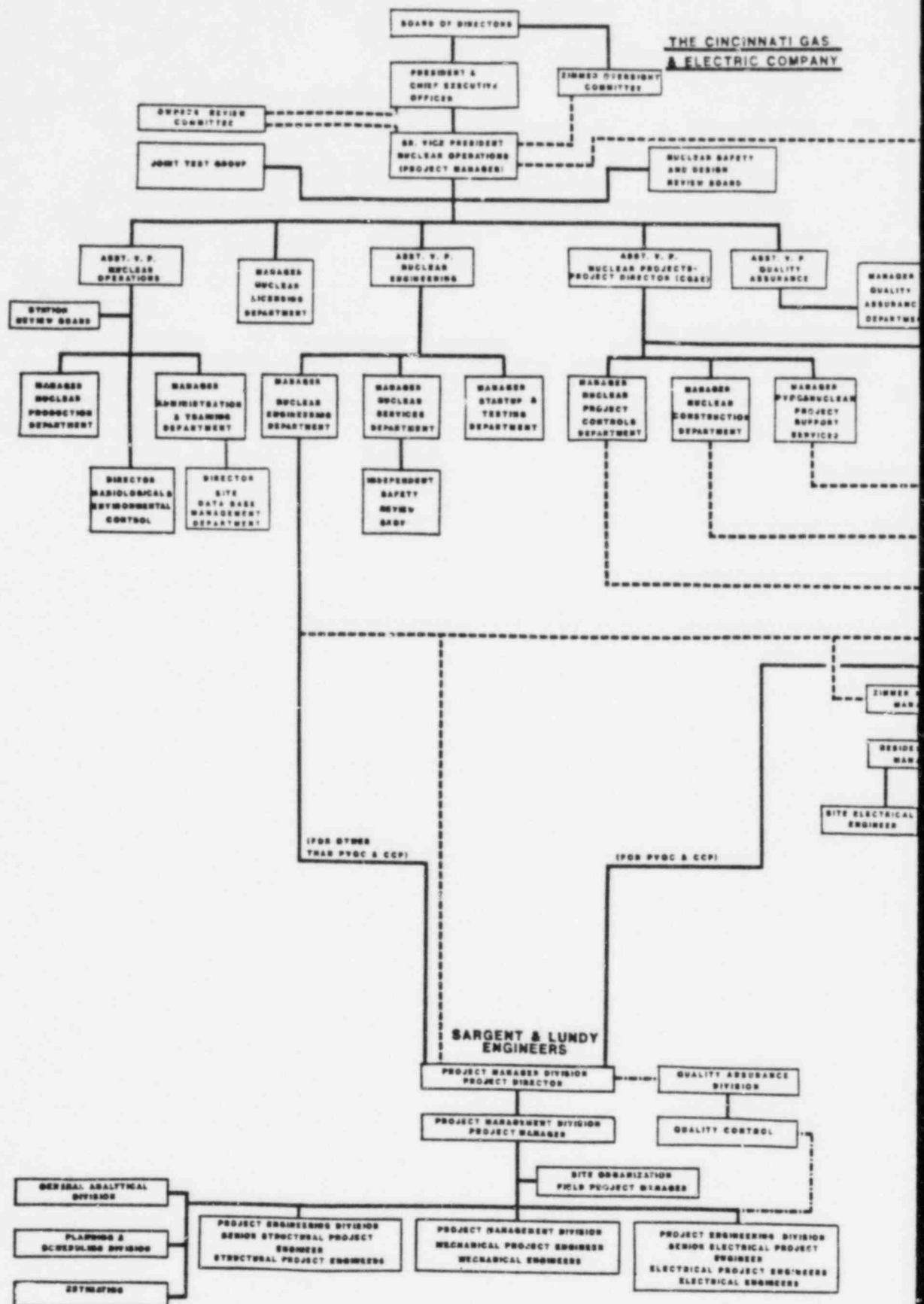
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VI. FUNCTIONS NOT PART OF PVQC OR CCP

ITEM OF WORK		RESPONSIBLE ORGANIZATION				
NO.	DESCRIPTION	CG&E	RECHTEL	HJ&K	ARCHITECT-ENGINEER	NS&S SUPPLIER
1	Operating & maintaining plant items turned over to CG&E	Perform & manage	Provide craft labor & supv. as requested	None	Provide engineering assistance	Provide engineering assistance
2	Independent Design Review	Contract for & manage	None	None	Provide design info to Reviewer	Provide design info to Reviewer
3	Designing plant changes in installation after start-up	Perform & manage	None	None	Perform as directed by CG&E	Perform as directed by CG&E
4	Designing and constructing site facilities not part of plant	Contract for & manage	Perform as requested	None	None	None
5	Operations Training	Perform & manage	None	None	Provide engineering assistance	Provide engineering assistance
6	Code Data Reports or Equivalent Existing ACME Section III Construction	Monitor	Manage & oversee preparation; Complete Rpt	Prepare	None	None

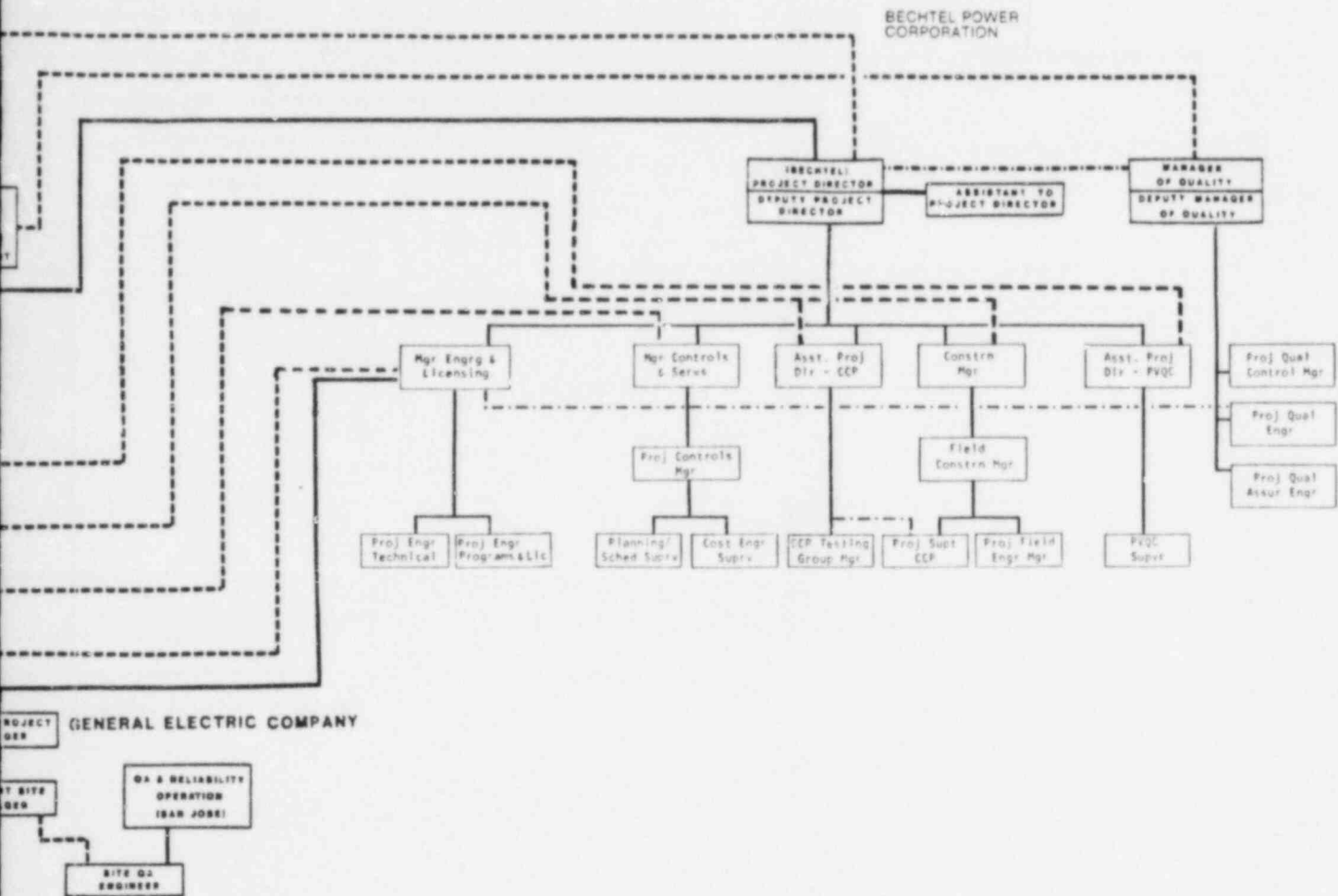
VII. LICENSING AND PERMIT SUPPORT

ITEM OF WORK		RESPONSIBLE ORGANIZATION				
NO.	DESCRIPTION	CG&E	BCHTEL	HJK	ARCHITECT-ENGINEER	NSSC SUPPLIER
1	Responses to NRC or other regulatory body	Perform & manage	Assist	Assist	Assist	Assist
2	FSAR changes	Approve & submit	Assist	Assist	Assist	Assist
3	Environmental report supplements	Approve & submit	Assist	Assist	Assist	Assist
4	10 CFR 21	Comply	Comply	Comply	Comply	Comply
5	10CFR 50.55(e)	Comply	Identify & assist CG&E in evaluating deficiencies potentially reportable	Identify & assist CG&E in evaluating deficiencies potentially reportable	Identify & assist CG&E in evaluating deficiencies potentially reportable	Identify & assist CG&E in evaluating deficiencies potentially reportable



ZIMMER INTEGRATED PROJECT ORGANIZATION

FOR PVQC & CCP



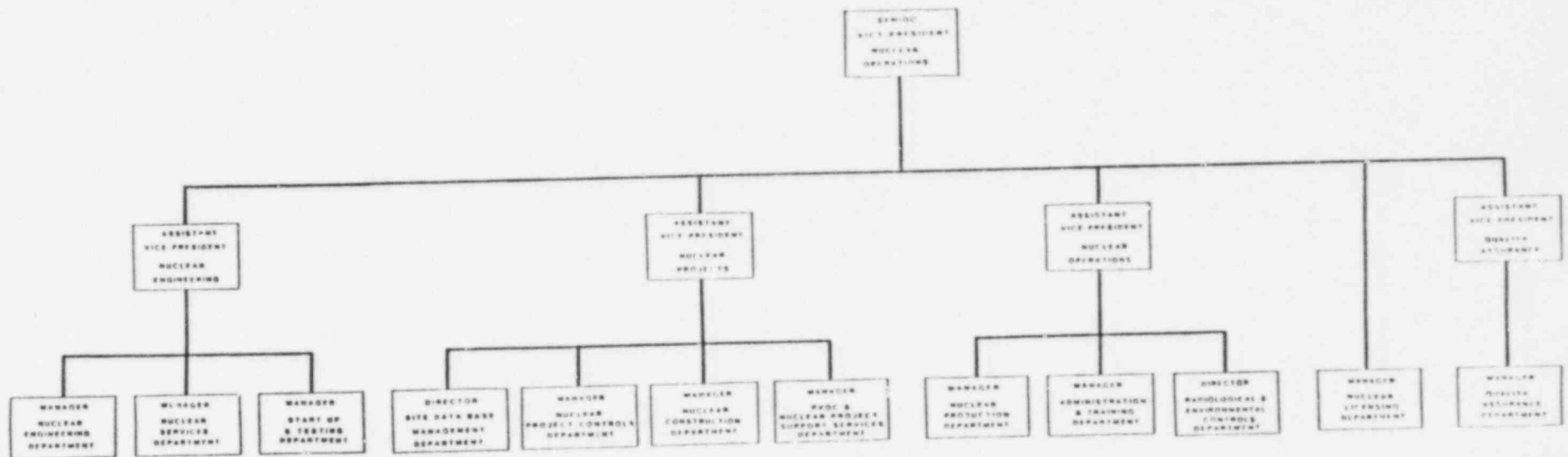
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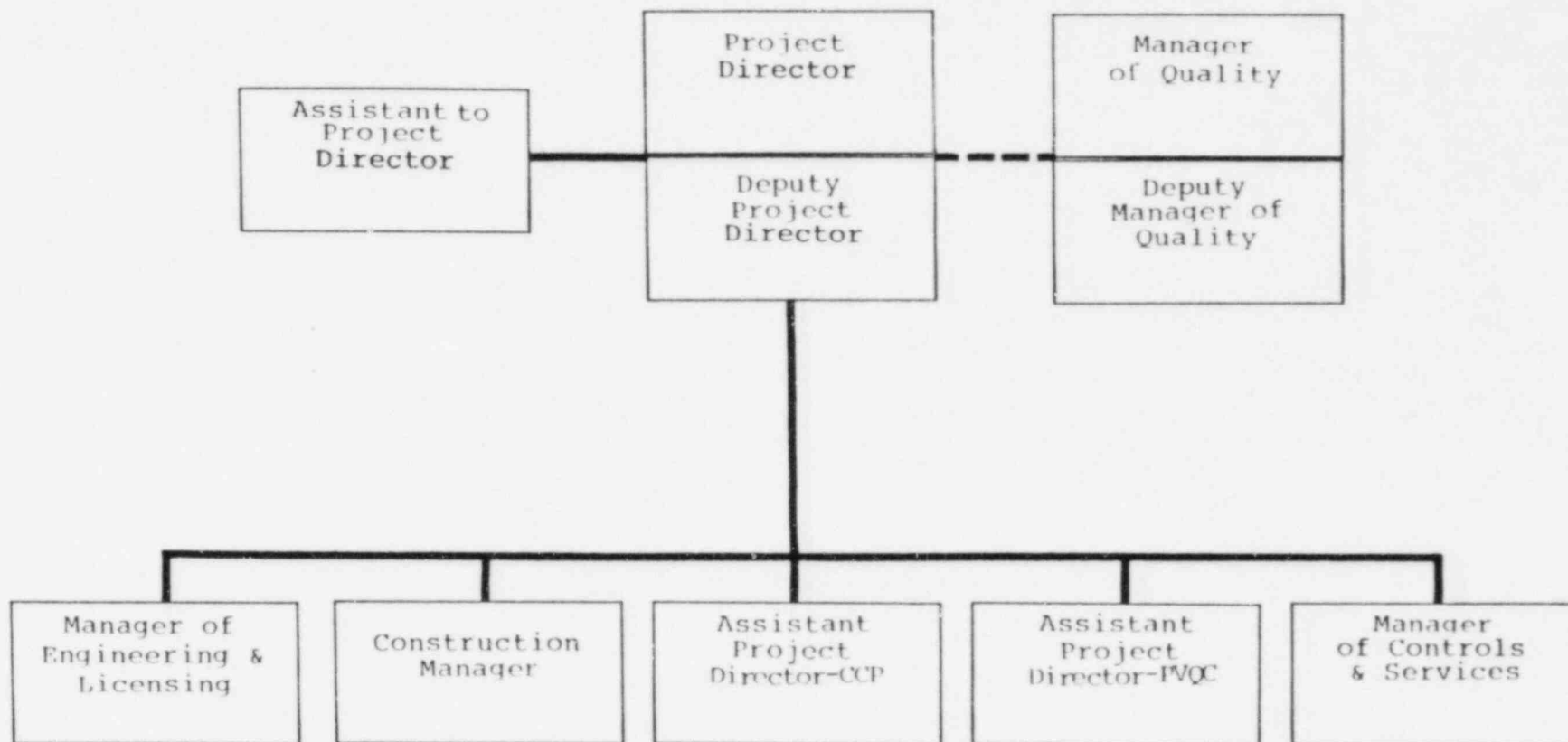
LEGEND

- PROJECT DIRECTION
- - - ADMINISTRATIVE DIRECTION
- · - · - PROJECT COORDINATION

CG&E ORGANIZATION FOR THE ZIMMER PROJECT

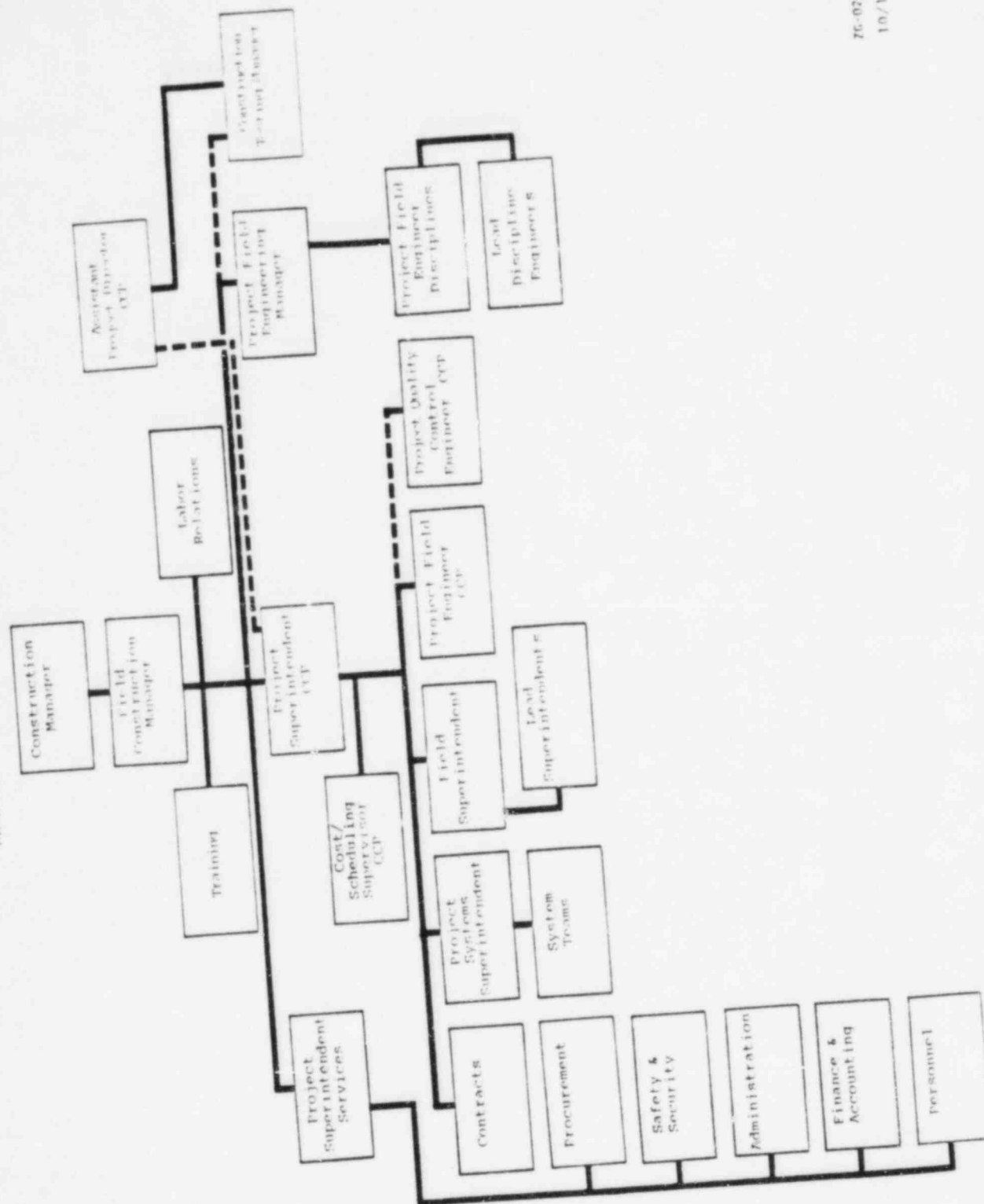


BECHTEL PROJECT
MANAGEMENT ORGANIZATION



————— Project Direction
 - - - - - Project Coordination

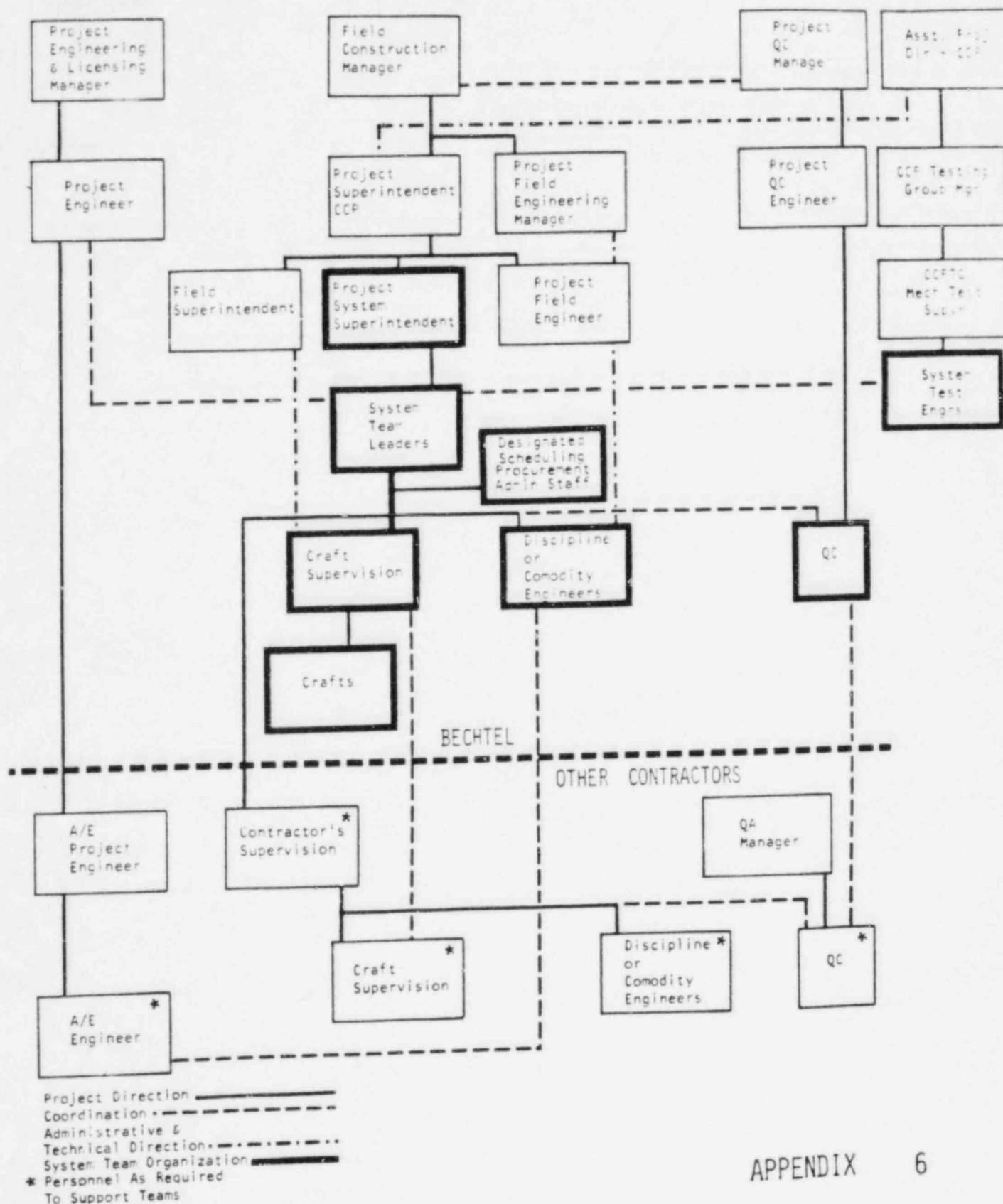
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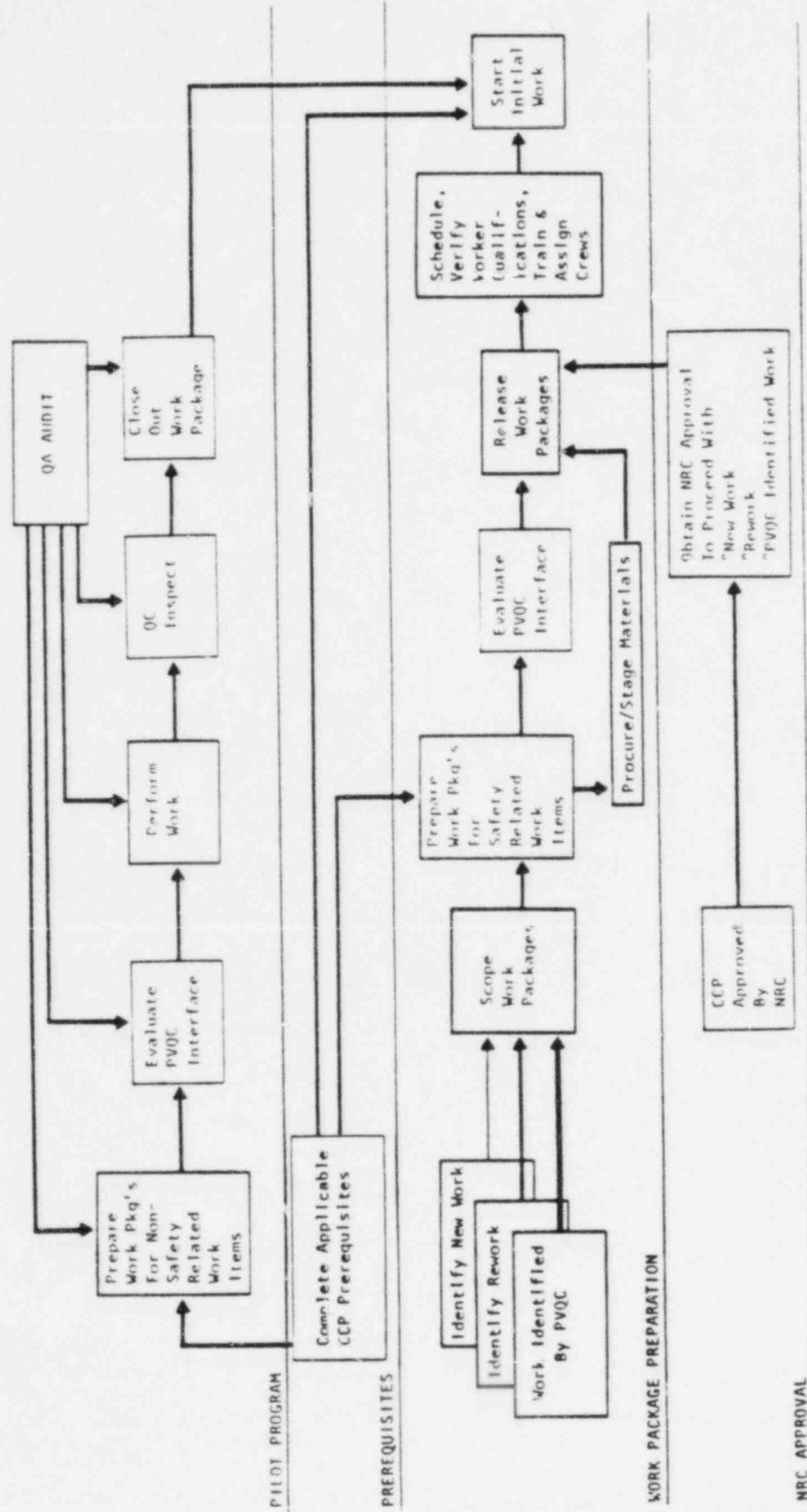
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graph TD
    CM[Construction Manager] --- FCM[Field Construction Manager]
    CM --- LR[Labor Relations]
    CM --- T[Training]
    CM --- PPS[Project Superintendent Services]
    PPS --- C[Contracts]
    PPS --- P[Procurement]
    PPS --- SS[Safety & Security]
    PPS --- A[Administration]
    PPS --- FA[Finance & Accounting]
    PPS --- P[Personnel]
    PPS --- CSS[Cost/Scheduling Supervisor]
    CSS --- PSS[Project Systems Superintendent]
    PSS --- ST[System Teams]
    CSS --- FS[Field Superintendent]
    FS --- LSI[Lead Superintendents]
    FS --- PE[Project Engineer]
    PE --- PQCE[Project Quality Control Engineer]
    PE --- PFED[Project Field Engineer Discipline]
    PE --- LDE[Lead Discipline Engineers]
    CSS --- APD[Assistant Project Director]
    APD --- PFEM[Project Field Engineering Manager]
    APD --- CTM[Construction Test and Monitor]
  
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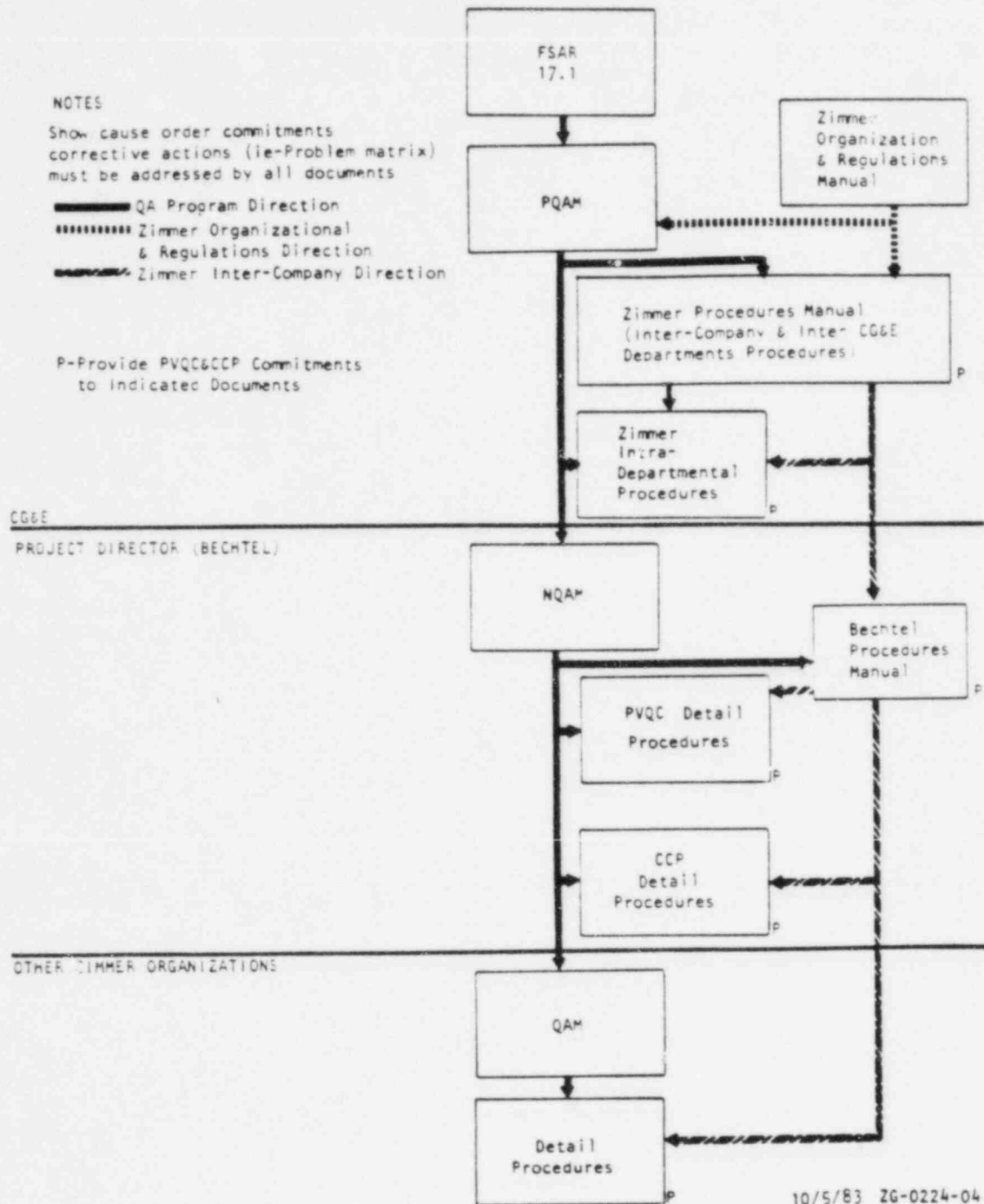
CCP SYSTEM TEAM ORGANIZATION



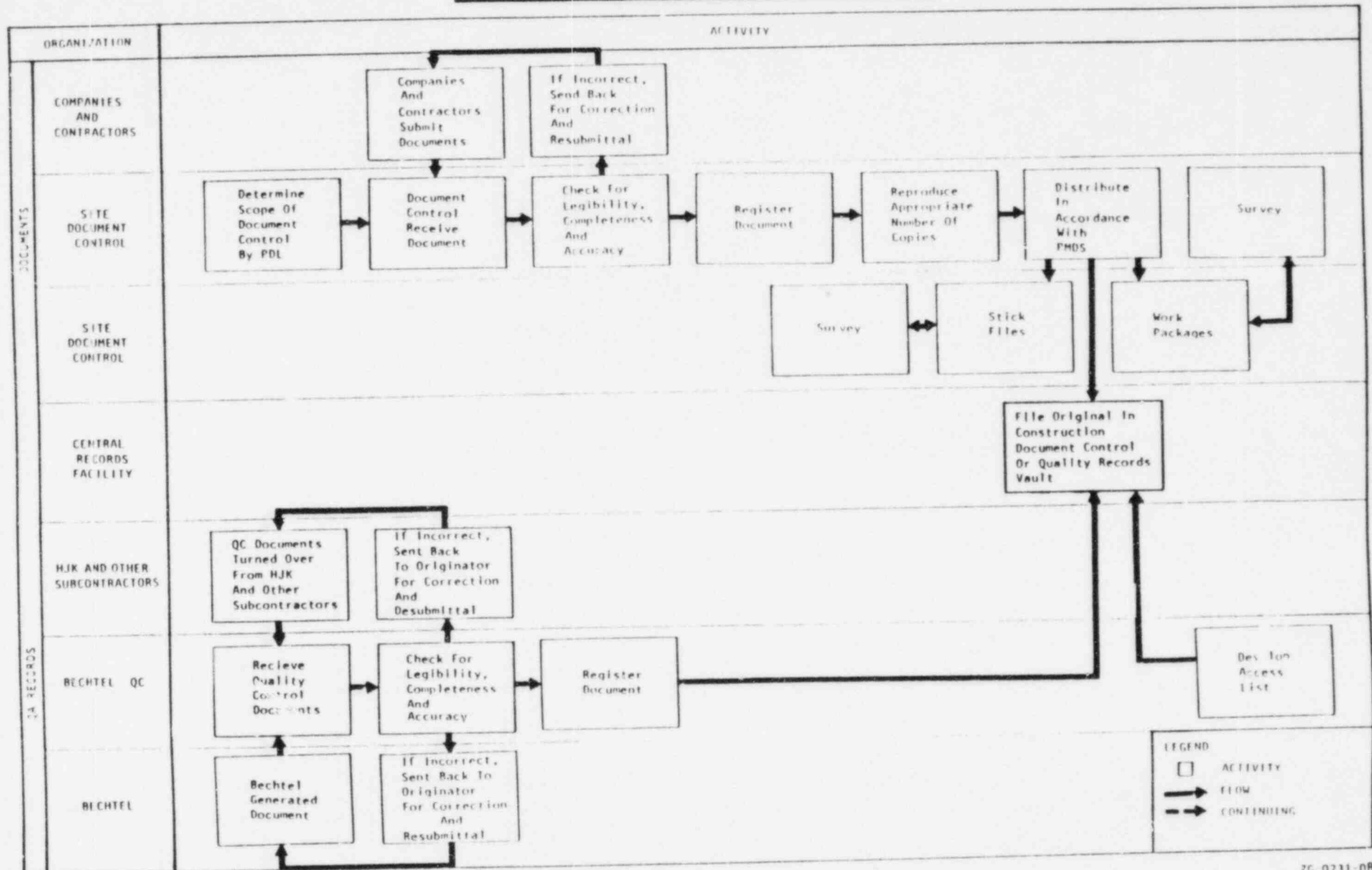
FLOW CHART FOR START OF CCP SAFETY RELATED WORK



QA PROGRAM AND PROCEDURAL DOCUMENT RELATIONSHIP HIERARCHY



FLOW OF DOCUMENTS & RECORDS FOR CCP



26-0711-08

APPENDIX 10

DESCRIPTION OF PROJECT NONCONFORMANCE PROCEDURE

Existing project procedures for control of nonconformances were reviewed by a site interorganizational committee to determine whether the procedures and methods could be improved. As a result of the committee's review, it was determined that the procedures for documenting and controlling nonconformances and discrepancies should be replaced by a single, project-wide procedure.

A new procedure for controlling and documenting nonconformances is being developed. One prerequisite is that all affected Zimmer project organizations will append this new procedure to their procedures manual to show the NCR flowpath through their system and to identify responsibility, by title, for activities in compliance with the new requirements. These requirements comprise the following principal elements:

- o Only one form, titled nonconformance report (NCR), shall be used to report, control, disposition, and complete nonconforming items.
- o A nonconformance is defined as a deficiency in characteristic, documentation, or procedure

that renders the quality of an item unacceptable or indeterminate with respect to project requirements. Examples of nonconformances include physical defects; test failures; incorrect or inadequate documentation; and deviations from prescribed processing, inspection, or test procedures.

- o Other documents, such as the existing nonconformance reports (NRs), inprocess inspection discrepancy reports (IIDRs), and field requests for design change will no longer be used to report nonconformances. NRs and IIDRs that were issued and validated prior to inception of the new NCR procedure, if found to be correct, will be transferred to CCP for processing. If it is determined these reports are incorrect as a result of PVQC, the NRs and IIDRs will be transferred to an NCR for clarification and processing.
- o NCRs shall be initiated by those individuals who are assigned the responsibility to perform inspections or verify quality. Typically, this includes cognizant field engineers and quality control personnel.

- o The cognizant field engineer or quality control person shall be notified by any person who observes or becomes aware of a nonconforming condition. Upon determination that an NCR is warranted, an NCR shall be written, signed, logged, and forwarded to the applicable discipline QC for review and validation.
- o Once an NCR has been logged, it cannot be voided. Should it become necessary to discontinue processing the NCR for reasons of redundancy, erroneous reporting, or other similar conditions, Quality Control shall state the basis for the action and sign-off the appropriate block with the Bechtel Project Quality Control Manager or the Bechtel Project Quality Control Engineer concurrence. No further action is required except for removal of hold tags, distribution, and filing.
- o All nonconforming items shall be segregated, tagged, marked, or appropriately identified to prevent inadvertent use or installation. Only quality control may remove hold tags or other identifiers from the nonconforming items.

- o NCRs that have been logged, but not validated, shall be maintained as a quality record with a qualifying statement as to why the NCR was not processed. If the NCR originator disagrees with the decision not to validate the NCR, he has the right of recourse to as high a level of management as necessary to obtain satisfaction. A separate procedure will be issued to explain this method.
- o All NCRs shall be reviewed by quality assurance to determine whether the nonconformance is possibly reportable under 10 CFR 50.55(e) or 10 CFR Part 21 in accordance with applicable procedures.
- o During activities under the Plan to Verify the Quality of Construction (PVQC), NCRs will be issued, validated, and trended. Dispositioning of NCRs is not included within the scope of PVQC activities; however, there may be instances where a generic condition is discovered in which a standard resolution can be used for specific occurrences of applicable nonconformances.

- o Dispositioning and closure of NRs, IIDRs, and NCRs that are valid as a result of PVQC shall begin with CCP. NCRs shall be dispositioned as REWORK, REJECT, REPAIR, and USE-AS-IS. All dispositions shall be reviewed by the cognizant quality entity for completeness, accuracy, and appropriate signatory approvals prior to final concurrence.

- o REPAIR and USE-AS-IS dispositions require approval by the responsible engineering organization. Requisite changes to design or as-built criteria shall be provided by the responsible engineering organization. The Bechtel Project Quality Control Manager or Bechtel Project Quality Control Engineer shall provide signatory concurrence for these dispositions.

- o REWORK and REJECT dispositions shall be provided by the cognizant field engineering organization with disposition concurrence provided by their designated quality entity. The cognizant field engineering organization may also recommend REPAIR and USE-AS-IS dispositions, which requires approval by the responsible engineering organization and concurrence from the Bechtel Project Quality

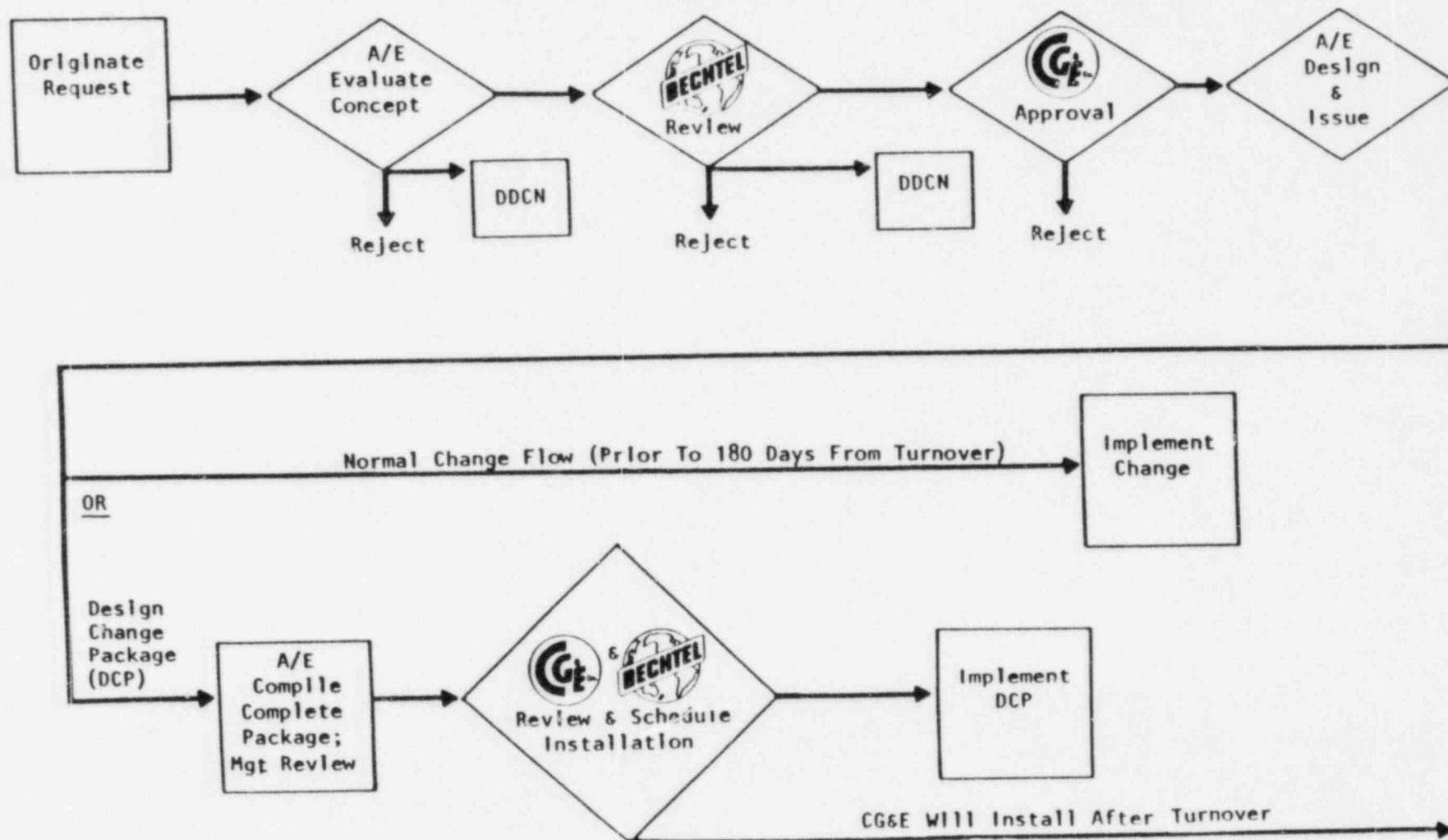
Control Manager or Bechtel Project Quality Control Engineer.

- o Interim dispositions of 1) conditional release for installation or 2) investigation may also be provided, as warranted. These dispositions require approval by the responsible engineering organization and concurrence by Bechtel's Project Quality Control Manager, Project Field Engineer, and Project Quality Assurance Engineer prior to implementation. Work limitations encompassed within each of the above categories must be clearly defined and established.
- o Approval of dispositions affecting ASME code items shall be obtained from the Authorized Nuclear Inspector (ANI) for ASME Division III items or from an Authorized Inspector (AI) for other ASME code items.
- o Implementation of NCR dispositions shall be performed in compliance with the disposition instructions. Reinspections shall be performed in accordance with the original requirements or approved alternate methods,

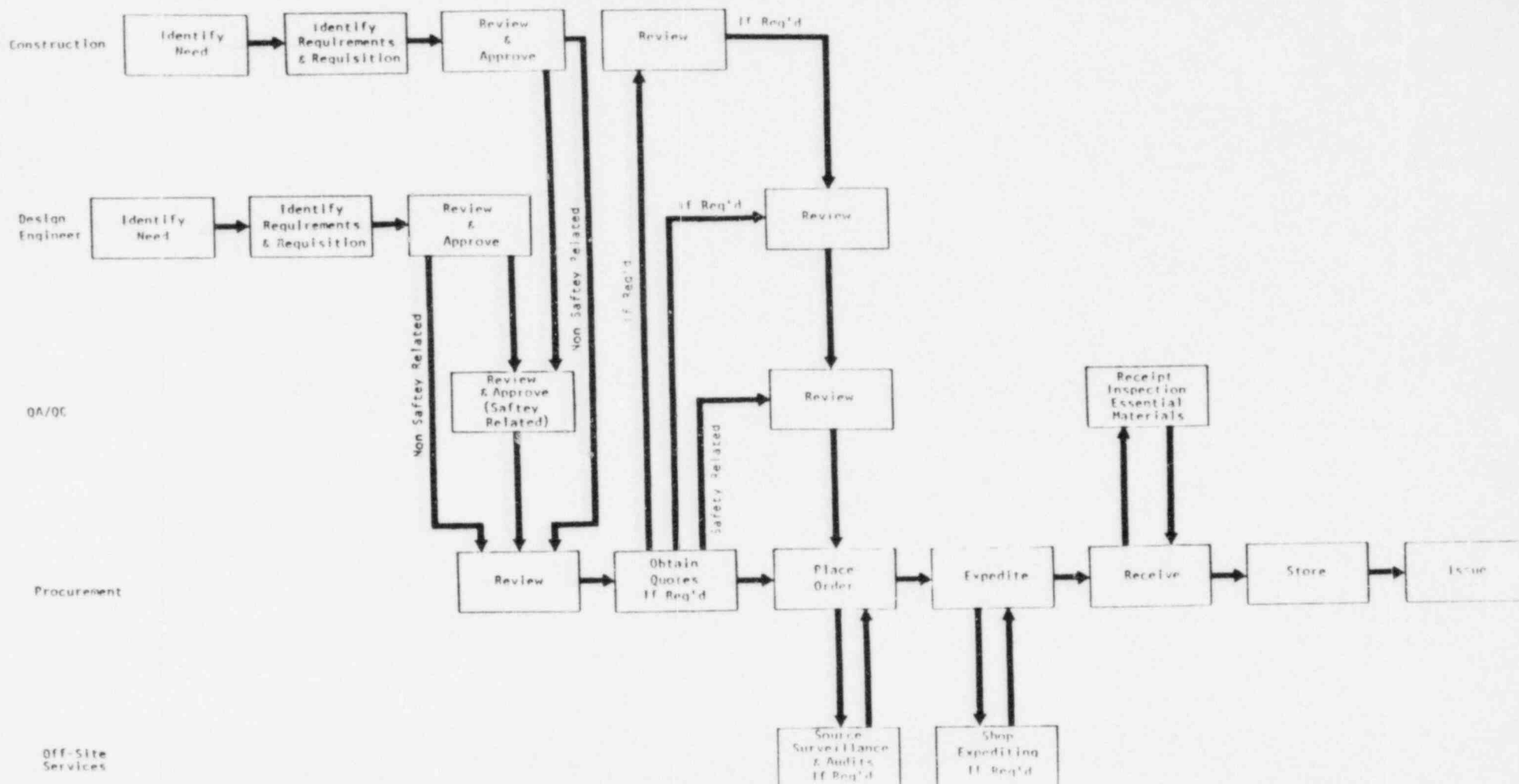
providing they are at least equal to the original requirements. The results of the reinspections shall be recorded on the NCR.

MAJOR DESIGN CHANGE CONTROL

(PROJECT CHANGE REQUEST - PCR)

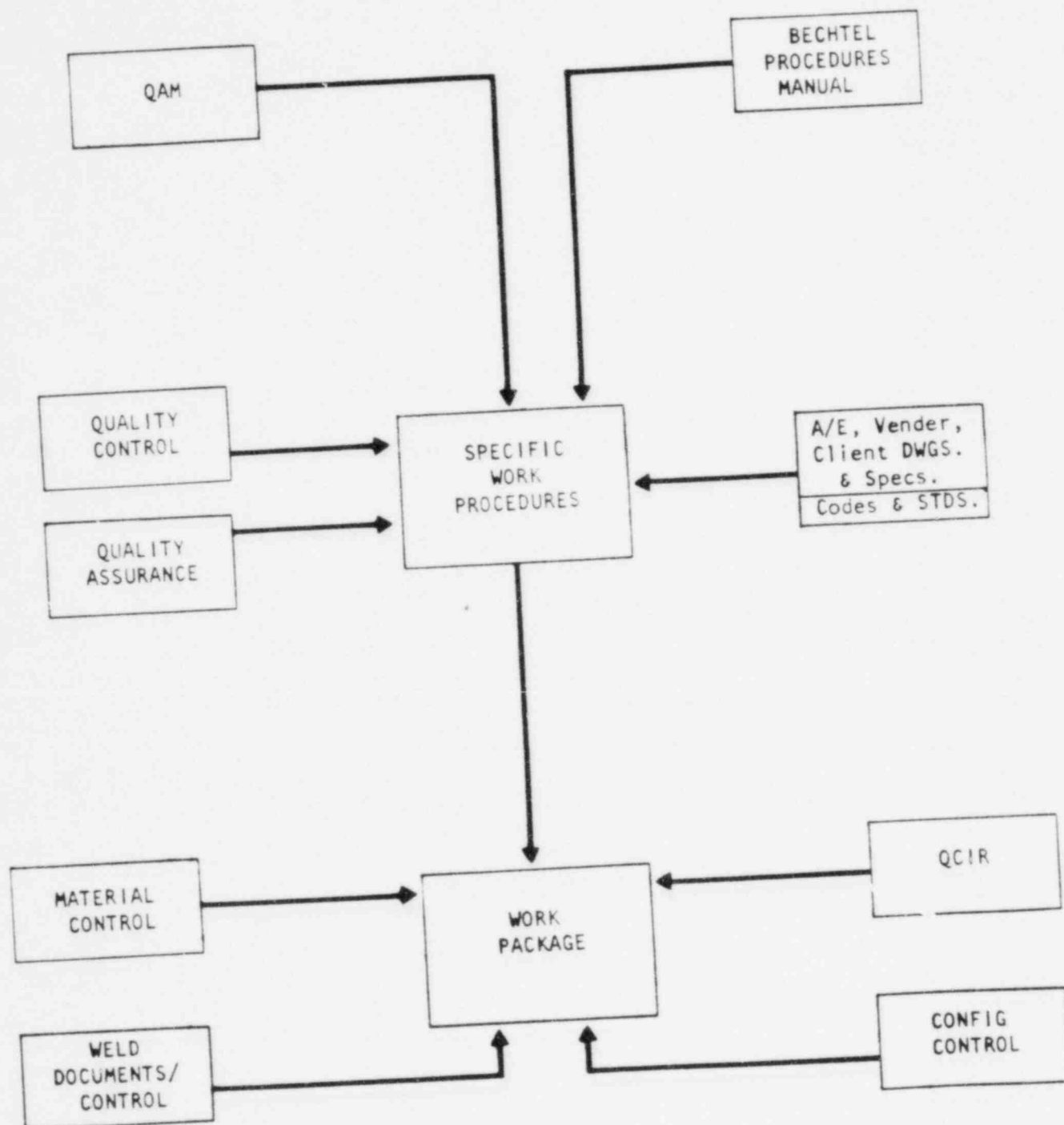


PROCUREMENT AND MATERIAL CONTROL

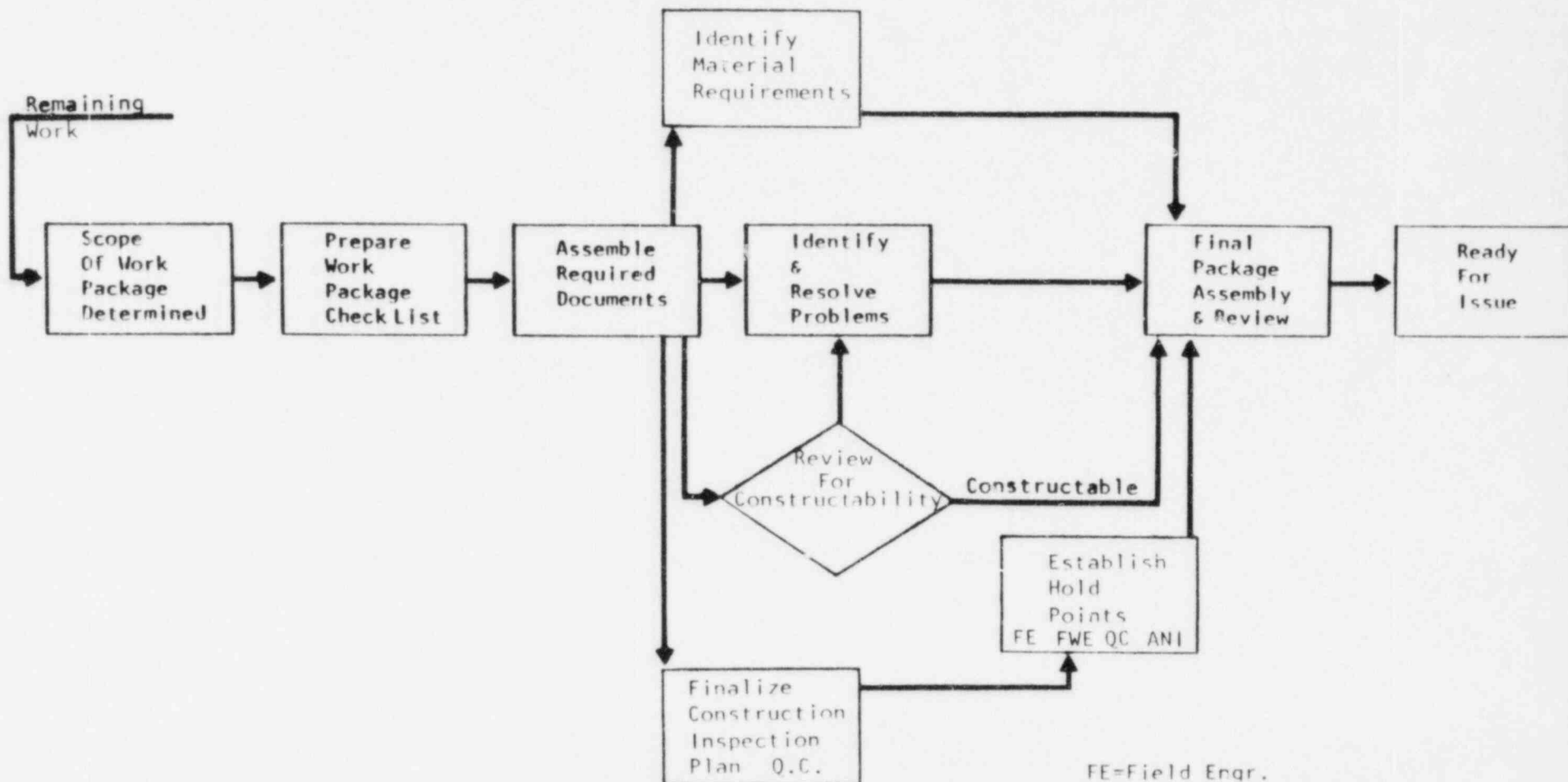


CONSTRUCTION PROCEDURES

ZG-0231-03



WORK PACKAGE PREPARATION



FE=Field Engr.
 FWE=Field Welding Engr.
 QC=Quality Control
 ANI=Authorized Nuclear Inspector

IMPLEMENTATION OF CCP SAFETY-RELATED WORK

MAJOR PREREQUISITES

ORGANIZATION	2.0
PROCEDURES	3.2
PROJECT CONTROL & MANAGEMENT REPORTS	3.5 3.6
CONST. DOC & RECORDS MGMT.	3.7
TRAINING	3.8
QA PROGRAM	4.0
ENGINEERING PROGRAM	5.0
CONFIGURATION & DESIGN CHANGE CONTROL	5.3
NCR PROCESS (APP. 10)	5.4
PROCUREMENT & MAT'L CONTROL PROGRAM	6.0
CONSTRUCTION PROGRAM	7.0
WELDING PROGRAM	7.5
PREOPERATIONAL TESTING PROGRAM	7.7
CONSTRUCTION TURNOVER PROGRAM	7.8
PILOT PROGRAM	7.10

