QUALITY PLAN FOR UNDERPINNING ACTIVITIES

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Approved Walter R Bud 3/2/82
Manager MPQAD

Approved J A Mooney 3/2/82
Midland Project Office

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GENERAL

All activities for the remedial soils work will be covered by the existing Consumers Power Company and Bechtel Power Corporation Topical Reports CPC-1-A and BQ-TOP-1, Revision 1A, respectively. This Quality Plan provides a more detailed written description of the accomplishment of activities specific to the soils remedial work.

The senior management consisting of J W Cook as Vice President of Projects, Engineering and Construction (Consumers Power Company) and J A Rutgers, Midland Project Manager for Bechtel Power Corporation (CPCo's contractor for the Midland Nuclear Plant), will review and approve major decisions and design concepts regarding remedial soils work. J A Mooney, CPCo Midland Project Office Executive Manager, and A J Boos, Bechtel Assistant Project Manager, will manage the remedial soils work. J F Fisher, Bechtel Construction Remedial Soils Group Supervisor, will coordinate the Bechtel and Subcontractor field activities.

W R Bird (Manager of MPQAD) and D E Horn (Civil Section Head) will manage the remedial work with the overview of B W Marguglio (Director of Environmental and Quality Assurance).

The specific Quality Plan and Q-list activities are defined in attachments to the Technical Specifications for Underpinning (7220-C-194 and 7220-C-195).

Organizations involved with the underpinning are defined in the Functional Matrix, Attachment 1 and as follows:

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CPCo Project Management - Sets policy, coordinates licensing review, and submittals to the NRC.

CPCo Safety and Licensing - Performs licensing reviews and coordinates FSAR revisions.

CPCo Design Production - Provides client design input and performs reviews of and comments on Bechtel Design Documents.

CPCo Site Management - Monitors remedial activities with respect to commercial type items, construction activities such as equipment care, labor and production.

Bechtel Project Management - Coordinates with client and sets policy for Bechtel organizations.

Bechtel Project Engineering - Establishes design criteria and reviews input from non-Bechtel sources. Originates and controls design documents for construction.

Bechtel Project Geotechnical Engineer - Functions as Project Engineering's Geotechnical representative on project. Performs geotechnical reviews related to design criteria and procedures. Interfaces with Geotech Services and Resident Geotechnical Engineer.

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Bechtel Construction Remedial Soils Group - Performs the overall on-site management of all Remedial Soils Group remedial underpinning activities including construction coordination between Bechtel, NRC, CPCo and Subcontractor. Provides direction over Subcontractor activities, and shall be the single point of contact between Subcontractor and Bechtel, NRC CPCo and other agencies.

Geotech Services - Provides design and field geotechnical services as requested by Project Engineering.

Resident Geotechnical Engineer - Performs foundation inspection and geotechnical on-site monitoring of related construction activities. Interfaces with the Project Geotechnical Engineer.

Bechtel Quality Control (QC) - Performs first-line inspection verification of site Q-list activities. Reviews safety-related construction procedures.

Midland Project Quality Assurance (MPQAD) - Provides the quality assurance for all remedial work including work

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done by Bechtel and Bechtel Subcontractors. Develops quality plans, reviews safety-related design documents and construction procedures. Performs over-inspections and pre-planned audits of Q-list activities as defined in the quality plans.

Subcontractor - Perform construction activities as contracted for, within the framework of the Midland Project Quality Program.

Consultant - Provides advice to Bechtel Project Engineering or Bechtel Construction (Remedial Soils Group) on construction methods, design, instrumentation or geotech.

DESIGN CONTROL

Design Control for the remedial underpinning of the Auxiliary Building (Electrical Penetrations and Control Structure) and Feedwater Isolation Valve Pit fill material replacement and Service Water Pump Structure will be provided by Project Engineering. Engineering Department Procedures (EDPs) and Engineering Department Project Instructions (EDPIs) will provide the controls for Engineering activities which are responsive to the Quality Program requirements.

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Design criteria will be developed from design input from consultants, the Midland Plant Safety Analysis Report, 50.54(f) responses submitted to the NRC staff, meetings with and submittals to the NRC staff, and testimony during the ASLB Soils hearing.

Design documents, including specifications and drawings (as well as changes and revisions to these documents), will be reviewed and checked for compliance to design requirements by Bechtel Project Engineering. Design documents will be reviewed by Quality Control, MPQAD, Project Geotech and Construction.

The MPQAD review applies to design documents designated as either Q-listed (safety related) or non Q-listed. For documents which are not safety related the MPQAD review will be limited to assuring the document in fact does not require safety related activities to protect Q-listed items, systems, or structures. Subsequent revisions to documents concurred to be non Q-listed need not be submitted to MPQAD for review unless such a revision specifically adds a safety related activity.

MPQAD will act as the focal point for the assurance of the resolution of quality related comments.

Technical specifications and revisions thereof will be generated, reviewed, approved, and controlled by Bechtel Project Engineering in accordance with EDP 4.49. Initial specifications will also be reviewed by CPCo Design Production and comments submitted to Bechtel Project Engineering. Specification Change Notices (SCNs), used as interim change documents between

revisions of the specification, will receive the same level of review and approval by Bechtel Project Engineering as the basic specifications. Specification Change Notices shall be administered and controlled in accordance with EDPI 4.49.1.

Project Engineering will prepare, review, approve, issue and control design drawings in accordance with EDP 4.46. Changes to engineering drawings will receive the same level of review and approval as the basic drawing and are administered in accordance with EDP 4.47 and EDPI 4.47.1.

Bechtel design calculations shall be originated, checked, approved, controlled and documented by Project Engineering in accordance with EDP 4.37. All design calculations submitted by the consultant will be checked, reviewed and approved by Bechtel Project Engineering.

Bechtel Construction Remedial Soils Group will request from or notify Project Engineering of changes to design documents by Field Change Requests (FCRs) and Field Change Notices (FCNs), respectively. The FCRs will be reviewed, evaluated, dispositioned, controlled and administered in accordance with EDP 4.62. FCNs will allow Field Construction to initiate field changes in design documents within the allowable guidelines of Field Procedure FPD-2.000 as provided by Project Engineering. FCNs will be reviewed, evaluated, dispositioned, controlled and administered according to EDPI 4.62.1.

The design interface for the underpinning activities between Project Engineering, project groups, technical support groups and consultants will be

administered as illustrated in Attachment 2, Design Document Interface Flowchart. Geotech design and calculation reviews will be accomplished per EDPI 4.25.2. The Subcontractor will receive design documents from Field Document Control to be utilized for construction.

Inspections will be performed by Bechtel QC to verify that construction is being performed to the latest revisions of the design documents; audits and/or overinspections will be conducted by MPQAD. Field geotechnical activities, including subgrade acceptance, will be accomplished in accordance with EDPI 2.14.8.

PROCUREMENT AND RECEIVING

All procurement of Q-list items and services for the remedial underpinning work will be done by Bechtel employing the technical and quality requirements established in the specifications and drawings. Q-material requisitions will be originated by Bechtel Construction Remedial Soils Group in accordance with FPG-8.000. Bechtel Construction Remedial Soils Group will be responsible for assuring that applicable regulatory requirements, design bases, specifications, procedures and drawings are included and referenced in the procurement documents. The Field Procurement Department will initiate formal purchase orders and will be responsible for ensuring that the procurement package is complete and includes all of the information required by the supplier. MPQAD will review and approve procurement documents in accordance with MPQAD Procedure M-5 to assure that necessary quality program requirements are included.

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Upon receipt of Q-material, inspections will be performed by Quality Control in accordance with PSP G-5.1 to verify items comply with the procurement package requirements and quality verifications packages are complete. Quality verification packages will be reviewed for availability, traceability and legibility by Bechtel QC and audited by MPQAD (MPQAD Procedure F-1M). In addition, a technical review will be performed by Bechtel QC for non-shop inspected items.

PREPARATION AND IMPLEMENTATION OF PROCEDURES/INSTRUCTIONS

All Q-list activities performed by Bechtel or the Subcontractor to support construction will be controlled by approved procedures and/or instructions. Written instructions to the Subcontractor will be in the form of engineering specifications, drawings, and approved changes thereto.

The G-321D form (controlled by EDP 4.58) attached to the specifications identify the procedures to be submitted by the Subcontractor prior to the start of fabrication and construction. These procedures will be logged, controlled, and distributed by the Field Document Control Center and will be reviewed by Project Engineering, Bechtel QC, Bechtel Construction Remedial Soils Group, MPQAD and Consultants as defined in Appendix A of the Quality Plan and Q-listed activities for each technical specification. Project Engineering will define the quality attributes of each procedure utilizing the Q-listed activities called out in Section 4.3 of the Quality Plans. The MPQAD review applies to procedures/instructions designated as either Q-listed (safety related) or non Q-listed. For documents which are not safety related

the MPQAD review will be limited to assuring the document in fact does not require safety related activities to protect Q-listed items, systems, or structures. Subsequent revisions to documents concurred to be non Q-listed need not be submitted to MPQAD for review unless such a revision specifically adds a safety related activity.

These procedures, when approved by Bechtel Project Engineering, Bechtel QC and MPQAD, will provide authorization for fabrication/construction to proceed.

INSPECTION, EXAMINATION, TEST AND CALIBRATION

Quality verification, inspection and testing of all Bechtel and Subcontractor Q-list activities will be performed by Bechtel Quality Control, independent of the Subcontractor and the Bechtel Construction Remedial Soils Group. Bechtel QC will prepare inspection plans (in accordance with PSP G-6.1 and G-1.1) utilizing inputs from technical specifications, design drawings and Subcontractor procedures. Project Quality Control Instruction (PQCIs) will be prepared to cover all Bechtel and Subcontractor Q-list activities. Existing PQCIs will be adapted for standard construction activities such as concrete batching, placement and testing, and reinforcing steel installation. Additional PQCIs will be developed as necessary to verify new underpinning activities such as temporary support installation, load transfer and threaded reinforcing connectors. All PQCIs will be subject to MPQAD review according to MPQAD Procedure E-2M. In addition, inspection and test activities will be monitored by MPQAD through the use of overinspection plans based on an independent evaluation of design and procurement documents (MPQAD

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Procedure E-1M). The Subcontractor will be indoctrinated to Bechtel QC and MPQAD procedures and inspection planning to assure that hold and witness inspection points included as an integral part of the Subcontractor's procedures, will be adhered to.

Test will be performed to qualify, demonstrate or assure that the quality of procured items or completed construction is as defined in applicable engineering drawings and procurement documents.

Calibration, maintenance and control of measuring and test equipment will be provided by an approved agency which will be pre-qualified by MPQAD. This agency will provide for traceability to National Standards, the unique identification of each instrument or equipment requiring calibration, the establishment of calibration frequencies, and the identification of calibration status. Calibration records will be maintained by the agency and transmitted to Bechtel Construction Remedial Soils Group for review. At the completion of the subcontract, these records will be turned over to Bechtel Quality Control. Performance and effectiveness of the agency will be verified by MPQAD audits and/or overinspections in accordance with MPQAD Procedures F-1M and E-1M.

HANDLING AND STORAGE

All Q-list materials will be stored and handled in accordance with general Field Procedures FPG 4.000 and 5.000 and supplemented by the Subcontractor's procedure. Storage and handling of material and equipment will be subject to

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Bechtel QC inspection and verification according to PSP G-5.1 and MPQAD overinspections and/or audits. (MPQAD Procedures E-1M and F-1M).

DOCUMENT CONTROL AND QUALITY RECORDS

Subcontractor documents which are to be submitted for review and comment by Bechtel Project Engineering, Bechtel QC and MPQAD will be controlled by the Field Document Control Center (FDCC) in accordance with FPD 1.000. Prior to the start of work, the Subcontractor will submit construction procedures as required by the specifications, purchase orders and/or drawings to Bechtel Construction Remedial Soils Group. Bechtel Construction Remedial Soils Group and the FDCC will distribute the procedures for review and approval as defined in the Quality Plans for the underpinning activities. Bechtel Project Engineering will be responsible for resolving review comments.

All quality records will be controlled by EDPs 5.16 and 5.24, Bechtel QC Procedure PSP G-7.1 and MPQAD Procedures F-11M and F-12M. These procedures will prescribe the requirement for preparation, control, distribution and transmittal of all Q-related procedures, specifications, drawings and inspection records.

NONCONFORMING ITEMS AND CORRECTIVE ACTION

Nonconformances discovered during construction inspection activities will be documented and controlled by Bechtel QC in accordance with PSP G-3.2 and MPQAD in accordance with MPQAD Procedure F-2M. These procedures provide for the identification and documentation of the nonconforming item, identify the

authority for and disposition of the nonconforming condition, and provide for documenting the reinspection and closeout of the nonconformance.

Within the Midland Project Quality Program, the identification of significant and reportable items will be accomplished by Bechtel QC and MPQAD through the review of nonconformance reports, supplier surveillances and quality assurance audits. Corrective action for significant quality problems will be controlled by Bechtel PSP G-3.2 and MPQAD Procedure F-3M.

In the design phase, investigation of cause and action taken to preclude recurrance of design deficiencies will be accomplished through EDP 4.65. Design deficiencies include those items which are not identified in the course of design development and which ultimately require changes.

AUDITS

Audits will be performed by MPQAD to verify conformance of Q-list activities. MPQAD Procedure F-1M includes provisions for the identification of deficiencies, the determination of corrective action, and the necessary follow up to verify that timely and effective action is taken.

TRAINING AND CERTIFICATION

All inspectors and quality auditors will be trained and certified in accordance with PSP G-8.1 or MPQAD Procedures B-2M and/or B-3M. Subcontractor field supervisory and engineering personnel will be indoctrinated to the Midland Project Quality Program. This will include an introduction to the

quality system, inspection techniques, nonconformance control, NRC activities, field and engineering design changes and site organizations and interfaces. The indoctrination will be completed prior to any work proceeding. The Subcontractor will be required to implement training for the procedures covering the Subcontractors Q-listed activities.

LIST OF

APPLICABLE

PROCEDURES

MIDLAND PROJECT QUALITY ASSURANCE DEPARTMENT PROCEDURES

B-2M	Personnel Training
B-3M	Qualification and Certification of Inspection and Test Personnel
E-1M	Site Inspection Planning and Site Inspection
E-2M	Review of Site Inspection Planning Prepared by others than MPQA
F-1M	Audit
F-2M	Nonconformance Reporting, Corrective Action and Statusing
F-3M	Resolution of Significant Quality Problems
F-11M	Documentation Control
F-12M	Quality Records
M-5	QA Review of Bechtel Field-Originated Procurement Documents

ENGINEERING DEPARTMENT PROCEDURES

EDP - 4.37	Design Calculations
EDP - 4.46	Project Drawings
EDP - 4.47	Drawing Change Notice
EDP - 4.49	Project Specifications
EDP - 4.58	Specifying and Reviewing Supplier Engineering and Quality Verification Documentation
EDP - 4.62	FCR/FCN
EDP - 4.65	Design Deficiency
EDP - 5.16	Supplier Document Control
EDP - 5.24	Document Distribution Control Center

FIELD PROCEDURES

FPG-8.000	FMRs
FPD-2.000	Field Change Request/Field Change Notice
FPG-4.000	Storage Maintenance/Inspection of Equipment and Materials
FPG-5.000	Maintenance/Inspection of Material and Equipment Released for Construction
FPD-1.000	Field Documentation of Correspondence Control

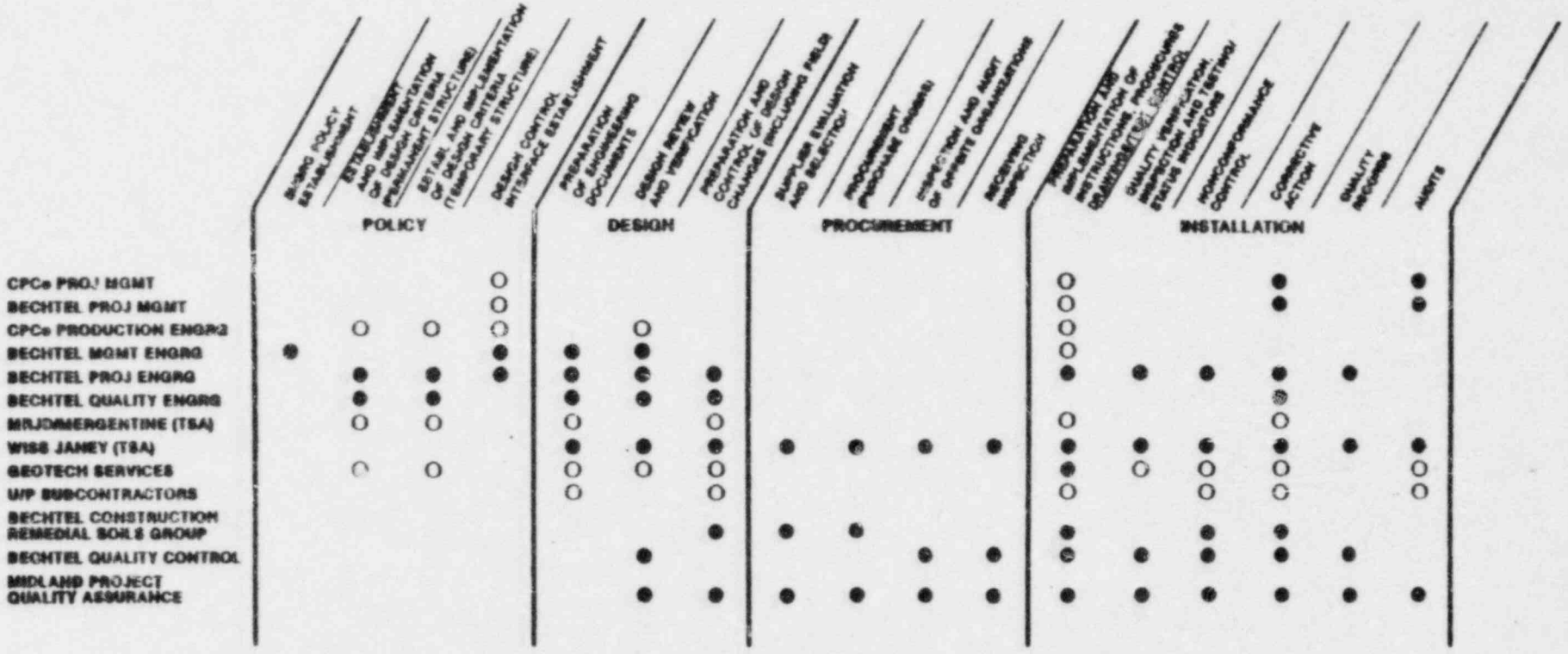
PROJECT SPECIAL PROVISIONS

PSP G-1.1	Assignment of Responsibilities, Manual Application and Control
PSP G-3.2	Control of Nonconforming Items
PSP G-5.1	Material Receiving and Storage Control
PSP G-6.1	Inspection Planning
PSP G-7.1	Document, Records and Correspondence Control
PSP G-8.1	Qualification, Evaluation, Examination Training and Certification of Construction Quality Control Personnel

ENGINEERING DEPARTMENT PROJECT INSTRUCTIONS

EDPI - 2.14.8	Resident Geotechnical Engineer for Midland Remedial Underpinning Operation.
EDPI - 4.1.1	Preparation of Design Requirements Verification Checklist.
EDPI - 4.25.2	Interface Control Design Documents for Remedial Soils Underpinning Operation.
EDPI - 4.47.1	Interim Drawing Change Notice for the Midland Project 7220
EDPI - 4.49.1	Specification Change Notification

PROJECT FUNCTIONAL MATRIX
FOR UNDERPINNING ACTIVITIES



● DIRECT INVOLVEMENT
○ INPUT ONLY

NOTE: This functional matrix represents the activities of both organizations described in the mini-topical and those included in the quality plans of the technical specifications for underpinning

ATTACHMENT 2

DESIGN DOCUMENT INTERFACE FLOWCHART