

QUALITY PLAN FOR
UNDERPINNING ACTIVITIES

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Approved

Walter Bird

Manager MPQAD

Approved

[Signature]
Bechtel Assistant Project Manager

Approved

[Signature]
Midland Project Office

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GENERAL

All activities for the remedial soils work are 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 certain soils remedial work. This Quality Plan was developed to describe how quality programmatic coverage is extended to encompass the underpinning contractors.

The senior management consisting of the Vice President of Projects, Engineering and Construction (Consumers Power Company) and the Midland Project Manager for Bechtel Power Corporation (CP Co's contractor for the Midland Nuclear Plant), reviews and approves major decisions and design concepts regarding remedial soils work. For CP Co, a Midland Project Office Executive Manager and an Assistant Project Manager, and for Bechtel, a Bechtel Assistant Project Manager, will manage the remedial soils work. The Bechtel Construction Remedial Soils Group Supervisor coordinates the Bechtel and Subcontractor field activities.

The Manager of MPQAD and the Civil Section Head will manage the MPQAD support of remedial work with the overview of the Director of Environmental and Quality Assurance.

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SCOPE

This Quality Plan is applicable for all "Q" listed aspects of the auxiliary building and service water structure underpinning tasks. The "Q" list for this work covers activities, items and structures beyond the requirements provided by the FSAR. This extension to provide Quality Assurance Program coverage over and above safety related items will provide an additional assurance that the non-safety related activities will not have an adverse effect on safety related structures. The following major categories of the remedial soils work are deemed to be "Q" listed and covered by this Quality Plan.

1. Underpinning of Auxiliary Building, Specification 7220-C-195(Q) - as a minimum, any work associated with "Phase II" or beyond and specifically any work below the 609 foot level.
2. Underpinning of the Service Water Pump Structure, Specification 7220-C-194(Q).
3. Installation of Monitoring System and the monitoring of structural response to underpinning activities, Specification 7220-C-198(Q).

The remedial work associated with the BWST, DG Building and underground piping are covered solely by the Bechtel and Consumers Quality Assurance Programs and are not covered by the special provisions of this Quality Plan. Likewise the "Q" listed activities associated with the freeze wall, permanent and temporary dewatering, soils borings, and observation wells remain as stated in the

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specifications, design documents and procedures covering those tasks.

Revisions to include additional specific activities for those task as "Q" listed (if any) will be done by revisions to the implementing work documents.

Any activity or structure associated with Tasks 1 through 3 described above, which will be excluded from Quality Assurance Program coverage will be done on an exception basis. These exceptions will be documented in appropriate design documents and implementing procedures. Assurance of NRR Region III concurrence to any general exclusion from the Quality Assurance Program is required prior to conducting any work activities in the excluded area.

Specifications, applicable procurement documents, drawings and procedures shall be specific as to the design attributes and activities which require quality verification. The need for verification shall be dictated by the following principal:

The Quality Assurance Program shall provide control over activities affecting the quality of the identified structures, systems and components to an extent consistent with their importance to (a) safety; (b) their possible detrimental interaction or effect on safety related structures and items; or (c) assuring obtainment of the overall Project Objectives.

The term quality verification includes all Quality Control and Quality Assurance Organization activities and responsibilities as well as the acquisition of documentation attesting to quality of procured items, calibration, testing, process qualifications, etc.

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REMEDIAL SOILS WORK ORGANIZATIONS

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

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

CP Co Safety and Licensing - Performs licensing reviews and coordinates FSAR revisions.

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

CP Co 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 issues design documents for construction.

Bechtel Project Geotechnical Engineer - Functions as Project Engineering's Geotechnical representative on project. Performs geotechnical

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reviews related to design criteria and procedures. Interfaces with Geotech Services and Resident Geotechnical Engineer.

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

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Bechtel Quality Control (QC) - Performs first-line inspection verification of site Q-list activities. Reviews Q-listed construction procedures, drawings and specifications.

Midland Project Quality Assurance (MPQAD) - Provides the quality assurance for all remedial work including work done by Bechtel and Bechtel Subcontractors. Develops quality plans, reviews design documents and construction procedures. Performs overinspections and pre-planned audits.

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 geotechnical items.

DESIGN CONTROL

Design Control for the underpinning of the Auxiliary Building (Electrical Penetrations and Control Structure), Feedwater Isolation Valve Pit fill material replacement and Service Water Pump Structure underpinning will be provided by Project Engineering. Engineering Department Procedures (EDPs) and

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Engineering Department Project Instructions (EDPIs) will provide the controls for Engineering activities which are responsive to the Quality Program requirements.

Design criteria will be developed from 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, drawings and procurement documents, shall be specific as to what is required to ascertain that processes, activities and final products meet their design requirements.

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 and MPQAD.

The MPQAD review applies to design documents designated as either Q-listed or non Q-listed. For documents which are not Q-listed, the MPQAD review is limited to assuring the document in fact does not require Q-listed 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 an activity which should be subject to the Quality Assurance Program.

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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 CP Co 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 shall 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,

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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 and Specification G-34 (Q) 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 shall be administered as illustrated in Attachment 2, Design Document Interface Flowchart. Geotech Services, design and calculation reviews will be accomplished per EDPI 4.25.2. The Subcontractor received design documents from the Bechtel Construction Remedial Soils Group to be utilized for construction.

Inspections are 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, are 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 performed by Bechtel employing the technical and quality requirements established in the specifications and drawings. Q-material

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requisitions will be originated by Bechtel Construction Remedial Soils Group in accordance with FPG-8.000. Bechtel Construction Remedial Soils Group is responsible for assuring that applicable Quality Program Requirements, design bases, specifications, procedures and drawings are included and referenced in the procurement documents. The Field Procurement Department initiates 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 reviews and approves procurement documents in accordance with MPQAD Procedure M-5 to assure that necessary Quality Assurance Program requirements are included.

Upon receipt of Q-material, inspections are 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 are 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

Written instructions to the Subcontractor are 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, which as a minimum, are to be submitted by the

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Subcontractor prior to the start of fabrication and construction. These procedures are logged, controlled, and distributed by the Field Document Control Center and are reviewed by Project Engineering, Bechtel QC, MPQAD and as defined in the Quality Plan and Q-Listed Activities for each technical specification. Project Engineering defines the specific quality attributes of each procedure. The MPQAD review applies to procedures/instructions designated as either Q-listed or non Q-listed. For documents which are not Q-listed, the MPQAD review is limited to assuring the document in fact does not require Q-listed 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 an activity which could be subject to the Quality Assurance Program.

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

INSPECTION, EXAMINATION, TEST AND CALIBRATION

Quality verification, inspection and testing of Bechtel and Subcontractor Q-list activities is 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 Instructions (PQCI) are prepared to cover all Bechtel and Subcontractor Q-list activities. Existing PQCI are adapted for standard construction activities such as concrete

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batching, placement and testing, and reinforcing steel installation. Additional PQCI's are developed as necessary to verify new underpinning activities such as temporary support installation, load transfer and threaded reinforcing connectors. All PQCI's are subject to MPQAD review according to MPQAD Procedure E-2M. In addition, inspection and test activities are monitored by MPQAD through the use of overinspection plans based on an independent evaluation of design and procurement documents (MPQAD Procedure E-1M). The Subcontractor is 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, are adhered to. For site construction activities, the detailed implementing procedures shall utilize integrated construction planning as follows:

- a) Hold points shall be clearly identified in the procedures.
- b) The procedures shall provide for QC/QA signoff to record the completion of the inspection holdpoints prior to proceeding with the further execution of subsequent procedural steps.

Tests are 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 is provided by an approved agency which will be pre-qualified by MPQAD. This agency provides for the traceability to National Standards, the unique

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identification of each instrument or equipment requiring calibration, the establishment of calibration frequencies, and the identification of calibration status. Calibration records are 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 is verified by MPQAD audits and/or overinspections in accordance with MPQAD Procedures F-1M and E-1M.

HANDLING AND STORAGE

All Q-list material is 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 is subject to 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 are controlled by the Field Document Control Center (FDCC) in accordance with FPD 1.000. Prior to the start of work, the Subcontractor submits 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 distributed the procedures for review and approval as defined in the Quality

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Plans for the underpinning activities. Bechtel Project Engineering is responsible for resolving review comments.

All quality records are 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 are 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 is 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 recurrence of design deficiencies will be accomplished through EDP 4.65.

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Design deficiencies include those items which are not identified in the course of design development and which ultimately require changes.

AUDITS

Audits are 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 are 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 are indoctrinated to the Midland Project Quality Program. This included an introduction to the quality system, inspection techniques, nonconformance control, NRC activities, field and engineering design changes and site organizations and interfaces. The indoctrination is completed prior to any Q-listed work proceeding. The Subcontractor is required to implement training for the procedures covering the Subcontractors Q-listed activities.