

TRIAL

Documents Requested by  
NRC Staff From Package  
Presented by Don Hovn,  
Field QA Engineer, but not  
used as Deposition

Exhibits 10/21, 22/80

8405240400 840517  
PDR FOIA  
RICE84-96 PDR



MEMORANDUM

Hom

"DON'T SAY IT - WRITE IT"

To DM Location \_\_\_\_\_

From Gary Date \_\_\_\_\_

Subject:

I've filled out the checklist for all  
the items I could find in the manual

QA manual will have to cover

- ✓ Organization
- ✓ Quality Assurance Program
- ✓ Instructions & Procedures
- ✓ Inspection
- ✓ Quality Assurance Records

- ✓ Document Control
- ✓ Non-Conformance
- ✓ Corrective Action
- ✓ Audits



Consumers  
Power  
Company

Midland Project P.O. Box 1963, Midland, Michigan 48840 - Area Code 517 631-0951

February 18, 1977

Mr. R. L. Castleberry  
Bechtel Associates Professional Corporation  
P.O. Box 1000  
Ann Arbor, MI 48106

MIDLAND PROJECT GWO 7020 - CANONIE CONSTRUCTION COMPANY  
SUBCONTRACT C-210  
File: C-210 Serial: 2030

We have reviewed your letter BLC-3597 and feel that the Specification Change Notice attached thereto should not be issued to the subcontractor at this time. Canonie is currently without a valid subcontract, as their subcontract expired under the provisions of Amendment #47 on December 1, 1976. It is anticipated that renegotiation of equipment rates and another end-date extension will be undertaken by your Subcontract Administration personnel in the near future. It would seem appropriate to incorporate the requirements of this SCN into the renegotiated subcontract at that time, as we understand that other changes in their QA Manual will also be required.

As this item has remained dormant for nearly a year, the disadvantage of the short additional delay should present fewer problems than attempting to enforce the requirements at this time.

Should you care to discuss this matter further, we would be pleased to hear from you.

T. C. Cooke  
Project Superintendent

TCC/JSS/pp

BECHTEL

# Telephone call

BY JOHN HOOK OF SITE Q.A. ROUTE RICHARDSON  
TO JERRY McBRIDE OF AA Q.E. BOB  
DATE MARCH 4 1977 TIME 9:30 CASTLE  
SUBJECT CANONIE Q.A. MANUAL JOB NO. 7220 STARNETTA

I ASKED JERRY WHAT EVER HAPPENED TO THE PROPOSED SCN TO CANONIE'S Q.A. MANUAL THAT WOULD ADD 4 MORE CRITERIA TO THE QUALITY PORTION OF THE MANUAL

JERRY STATED THAT THE SCN WAS ISSUED TO C.P.CO. (TOM COOKE) FOR CONCURRENCE. C.P.CO. DID NOT CONCUR WITH THE SCN AT THIS TIME AS EVIDENT IN T.C COOKE'S MEMO 2030 DATED FEB. 18, 1977 TO R. CASTLEBERRY.

JERRY STATED THAT THE SCN IS NOW IN "HOLD," AWAITING A NEW REVISION AND CONTRACT.

John Hook

CONSUMERS POWER COMPANY  
**RECEIVED**  
FEB 9 1977

FIELD QUALITY ASSURANCE  
MIDLAND, MICHIGAN

TO **BECHTEL**  
**D. HORN**

Telephone call

ROUTE

Richardson

BY Jon Hook of MIDLAND QA

TO JERRY McBRIDE of AA QE

DATE FEBRUARY 7 1977 TIME 2:45

SUBJECT CANONIE'S QA MANUAL

JOB NO. 7220

~~Boos~~  
Connelly  
FILE Church  
Stonetta

JERRY STATED THAT THE PROPOSED SCN TO SPEC. 7220 C-210 REV. 4 ON SECTION 16.0 HAS BEEN APPROVED BY BECHTEL PROJECT ENGINEER. THIS SCN WILL BE ISSUED AFTER APPROVAL IS GIVEN BY CONSUMER'S POWER.

IN ADDITION TO THE 5 AREAS TO ADDRESS IN THEIR Q.A. MANUAL, THESE FOUR ARE BEING INCLUDED VIA THE SCN.

THEY ARE :

- 1) DOCUMENT CONTROL
- 2) NON-CONFORMANCE
- 3) CORRECTIVE ACTION
- 4) AUDITS

CONSUMERS POWER COMPANY  
**RECEIVED**  
FEB 08 1977

MIDLAND PLANT PROJECT  
MIDLAND, MICHIGAN

*Jon Hook*

*Bechtel QA Comments on  
Canonie QA Manual*

ATTACHMENT A

Areas not addressed in Canonie's QA Manual.

- 1) Nonconformances and the control of nonconformances.
- 2) Corrective actions.
- 3) Instructions, procedures and drawings

Per Spec. 7220-C-210, Section 16.3, "Activities affecting quality shall be described by documented instructions. . . and shall be accomplished therewith."

Canonie's QA Manual mentions their "Manual of Practice" for specific instructions. These instructions must be included in this manual.

- 4) Canonie's QCE has no authority to stop work.
- 5) Quality Assurance program does not identify items or services to be covered by the QA program.
- 6) In Section 4.9 - "Quality Control documents" a copy of internal audits should be included in records to be maintained.

Changes that need to be made to Canonie's QA Manual to be in compliance with current job requirements.

- 1) Section 3.4.2 - "This file shall be separate . . . and not available to the project staff. This information must be made available to the project staff in accordance with ANSI N45.2.7-7.
- 2) Section 4.4 - "Establishment . . . inspection and testing program". Bechtel does the testing for Canonie. The QA Manual should reflect this information.
- 3) Section 4.5 - "Ongoing . . . testing program" Bechtel is in charge of the testing program. Canonie's QA Manual should reflect this information.
- 4) Section 4.6 - "Calibration of measuring equipment" Bechtel is in charge of this area and Canonie's QA Manual should reflect this information.
- 5) Section 4.7 - "Control of purchased materials and equipment" When nonconforming material has been identified, a deviation report should be initiated and Bechtel QC notified. The preceding sentence should be added before the last paragraph on page 4-9.

*Things to check  
purchas. in QA*

*Positive criteria 4-7*

- 6) Section 4.8 - "Special process work"  
This is not in Canonie scope of work. Bechtel does this, and the QA Manual should reflect this information.
- 7) Section 5.0 - "Examples . . . procedures"  
Appendix D - is not applicable and should be taken out.
- 8) Appendix C - ". . . structural fill (soils)"  
The following list are sections in Appendix C that should be deleted because Canonie is not doing the work, Bechtel is.
  - a. Section 1, last paragraph
  - b. Section 4, all
  - c. Section 5, all
  - d. Section 6, all
  - e. Section 8, paragraph 2.0
  - f. Attachments:  
C-6, C-7, C-8, C-9, C-10, C-11, C-12, C-13, C-14, C-17, C-18
- 9) Appendix D - "Example of calibration procedure"  
This should be deleted. This does not apply to Canonie, Bechtel does this work.
- 10) Appendix E - "Example of deviation form"  
This appendix should be included in the main part of the manual, not as an example. Also a procedure on nonconformance should be written.  
When a deviation report is made, there must be a method to contact Bechtel QC.



CONSUMERS POWER COMPANY

RECEIVED  
MAY 17 1977

FIELD QUALITY ASSURANCE  
MIDLAND, MICHIGAN

Bechtel Power Corporation

Post Office Box 2167  
Midland, Michigan 48640



May 12, 1977

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

Attention: J. L. Corley


Job 7220 Midland Project  
Canonie Construction Co.  
Quality Assurance Program  
Addendum dated 4/5/77  
BCCC-2520R

Dear Mr. Corley:

We are reviewing the subject QA Manual to assure compliance with program requirements. A copy of this manual is hereby submitted for your concurrent review and comment.

May we have your comments by June 1, 1977?

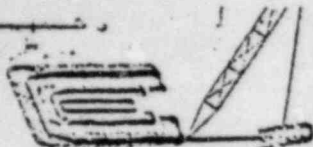
Very truly yours,

  
J. F. Newgen

JFN/JV/dlf

Attachments

AC	
REW	
DRK	
DEH	
WHS	
RGW	
Return	



CANONIE CONSTRUCTION CO. / P.O. BOX 509 / U.S. 31 & M-43 / SOUTH HAVEN, MICHIGAN 49090 / (616) 637-1171

May 3, 1977

RECEIVED

MAY 9 1977

BECHTEL POWER CORP.  
JOB 7220  
PER 15451 C210

Mr. John Church  
Subcontracts Department  
Bechtel Power Corporation  
P.O. Box 2167  
Midland, Michigan 48640

Subject: Consumers Power Company  
Midland Station Units 1 & 2  
Bechtel Power Corporation Subcontract #7220-C-210  
Plant Foundation Excavation and Cooling Pond Dikes  
Canonie Construction Co. Quality Assurance Program  
dated August 1976  
Addendum dated 4/5/77, Rev. 3

Reference: Contract Change Notice 44-F, Ser # C-210-B-190, dated 4/21/77  
Letter dated 6/29/76, J. F. Newgen to Canonie Construction Co.  
Letter dated 9/14/76, J. F. Newgen to J. McKane

Dear Sir:

In response to the referenced letters above, Canonie Construction Co. submits for your review, comment, and acceptance the attached addendum to the subject Canonie Construction Co. Quality Assurance Program. This addendum shall be applicable for all work covered by the above referenced subcontract for the scope of work defined in the referenced specification.

Work requiring the implementation of the Quality Assurance Program is defined in Exhibit D, Technical Specification for Plant Foundation Excavation and Cooling Pond Dikes, of the subject subcontract specification. The Quality related activities so defined are as follows:

- A. Placement of plant area backfill and berm backfill. Backfill is defined by section 13.2 of the referenced subcontract.
- B. Moisture control of the plant area and berm material to verify conformance to the provisions of section 12.6 of the referenced subcontract.
- C. Compaction requirements for backfill in the plant area and the berm to be in compliance with Bechtel requirements stated in section 13.7 and 12.8 of the referenced subcontract.

Mr. John Church  
Page 2  
May 3, 1977

Further, to assure the successful execution of the above referenced subcontract in compliance with all owner/architect/engineer-constructor requirements, the attached addendum shall be in effect until such time as it is revised or terminated in order to affect the successful implementation and completion of all work.

*W. R. Moore*

W. R. Moore  
Quality Assurance Engineer,  
Canonic Construction Co.

*W.R. Moore for J.K. McKane*

J. K. McKane  
Vice President,  
Earthmoving Division;  
Manager of Quality Assurance,  
Canonic Construction Co.

WRM/bw

Enclosures (1/1)

cc: J.K. McKane



W.R. Moore	5/3/77
Jack H. Hines	5/3/77
REVISION	

Page 1 of 13

Date: 4/5/77  
Rev: 3

Addendum to: Canonie Construction Co.  
Quality Assurance Manual  
Dated, August, 1976

Contract: Bechtel Subcontract  
No. 7220-C-210

Location: Midland Station Units 1&2  
Midland, Michigan

Owner: Consumers Power Company

Title: Supplemental Requirements for the Canonie Construction Co  
Quality Control Program for Q Listed Areas



Item I, changes:

Add to para. 2, section 1.0, Introduction:

The Quality Assurance manual shall be supplemented by Quality Control procedures written to clarify and further implement the Quality Assurance program of Canonie Construction Co. Prior to site implementation, these procedures shall be approved by the Manager of Quality Assurance, Canonie Construction Co. and the Contractor or appropriate owner's representative. All Quality Control procedures shall be controlled in the same manner as the Quality Assurance program and revisions and addenda shall be reviewed and approved in the same manner as originals. These procedures shall indicate the scope of activities covered therein, the personnel designated by said procedures with responsibilities by job title, and shall provide sufficient instructions to clearly indicate what activities are necessary to demonstrate compliance with the accepted Quality Assurance program.

Delete para. 3, section 2.4 as written and insert:

The Quality Control Engineer shall have the authority to stop the continuation of work that is deficient in characteristic, documentation, or procedure which renders the quality of an item unacceptable or indeterminant. This shall include, but not be limited to physical defects, test failures, incorrect or inadequate documentation, or deviation from prescribed processing, inspection or testing procedures.

Delete sentence 1, para. 4, section 3.1 as written, and insert:

Activities which may be routinely performed by Canonie Construction Co. as part of inspection services on a project, such as concrete testing, structural earthwork control or testing of reinforcement steel, shall be conducted to recognized standards or referenced specifications.

Delete sentence 4, para. 2, section 3.2.3 as written and insert:

Revision receipts shall be signed and dated by the assignee, or designated representative, and returned to the Manager of Quality Assurance within 15 days of receipt.

Delete sentence 4, para. 3, section 3.2.3 as written and insert:

A new approval sheet, signed by the President, Canonie Construction Co. and the Manager of Quality Assurance, shall be issued to indicate the current revision number and date of the manual issue in effect. This shall indicate Canonie Construction Co. acceptance of the policies and procedures defined therein.

Delete sentence 2, para. 1, section 3.4.2 as written and insert:

A file of all Quality Assurance/Control records shall be maintained to comply with all owner/constructor contractually specified requirements. These records shall be maintained as required by



this manual and applicable code and regulatory requirements.

Delete sentence 2, para. 1, section 4.4 as written and insert:  
For all the various activities included in the scope of work for the referenced specification,

Item II. Supplements:

1.0 Organization

The Canonie Construction Co. Quality Control Organizational interface with the Bechtel Power Corp. is shown in figure 1.

- 1.1 The Project Manager performs overall site supervision to ensure that construction schedules are maintained and that the work is performed in compliance with drawings and specifications. He coordinates work with the site Quality Control Engineer to assure compliance to the accepted quality program.
- 1.2 The QC Engineer has responsibilities and duties as follows:
  - 1.2.1 He will document the classification of the borrow by the Testing Laboratory to the Project Manager for use by the Field Foreman.
  - 1.2.2 Based on borrow selections he prepares daily reports verifying by station, by zone, the fill placement, the moisture control, and the compaction conformance necessary to meet specs.
  - 1.2.3 In this function, he is completely mobile and will be available for comment from the General Contractor's inspection force. He will be in communication with the Project Manager to correct any deviations in the fill requirements as established by the project specifications.
  - 1.2.4 The Quality Control Engineer has the authority to assure total compliance to the Quality Assurance/Quality Control program by all Canonie Construction Co. personnel.
- 1.3 The Field Superintendent shall initiate compliance with the borrow/cut programs as outlined by the QC Engineer through the Project Manager. He shall be responsible for reporting field production requirements to the Project Manager.
- 1.4 The Project Engineer shall work closely with the project manager and QC Engineer to establish survey and



control methods required to assure proper definition of zone fills and lift controls.

## 2.0 Quality Control Program

- 2.1 The Quality Control Team or member shall be responsible for quality control and documentation for all Q Listed areas as designated by contractor's and/or owner's specifications. The inspection unit shall assure that the project specifications are strictly enforced. Qualified and experienced personnel shall comprise the inspection force.
- 2.2 The Quality Control Engineer and/or his representative shall be responsible to the Canonie Construction Co. project QC manager and shall be independent of production, construction, scheduling and procurement.
- 2.3 The QC Engineer shall develop, in the course of his duties and as required, adequate forms, charts and logs to compile and assimilate required QC information and documentation of Q listed work.
- 2.4 All QC Records and Documentation shall be stored in a fire resistant filing cabinet. The records shall identify the inspector or data recorder, the activity monitored, date of inspection or test, test results, acceptability and any corrective action required or taken. This information shall be supplemented as required.
  - 2.4.1 The On Site Records shall be filed in an orderly fashion and shall be readily identifiable and retrievable. Upon completion of construction work, records shall be turned over to the owner's operations group or his designated representative.
- 2.5 The QC Engineer shall assure that the proper zoned materials are delivered to the proper location and the proper compaction control is performed as required by the specifications.
- 2.6 The QC Engineer shall schedule his work so that all operations, reports, documentation and related items shall be available to the contractor and/or owner and to facilitate the establishment of a functional interface between the appointed testing laboratory, general contractor and field superintendents.
- 2.7 The QC Representative shall become familiar with the testing laboratory personnel testing methods and individual soil classification characteristics.



Page 5 of 13

2.8 The QC Engineer's level of authority shall be equal to the highest ranking production unit ie: supervisor or superintendent. The QC Engineer does not direct work forces, except through supervisory personnel, and then only in quality related areas to insure compliance with job specifications, procedures, and drawings.

6.0 Document Control

6.1 Index Card File System

6.1.1 Individual Card for Each DWG shall be maintained listing:

DWG Title and Number

Revision Number

Revision Date

Date Received

Number Received

Classification: Preliminary  
or Approved

Distribution: Stick Number or Name of Person  
drawing is issued to

6.2 A Drawing Summary List shall be maintained listing:

Stick Number

Drawing Number

Title

Revision and Date

Status: Preliminary  
or Approved

6.3 Drawing Awareness

New or revised drawing will be routed to assure all personnel concerned are aware of change. A list of document assignees shall be maintained to assure proper distribution.

6.4 Separate storage of Superseded Drawings and Specifications to Maintain Adequate Control shall be provided. All superseded documents shall be voided.

6.5 Document control shall not be confused with documentation control. It is not intended that document control shall be specifically a function of the quality control Engineer. An authorized agent of the QC Department may





Page 6 of 13

perform the document control function. Documentation shall be a function of the QC Engineer and shall show all pertinent information as required by contractor's specifications.

8.0 Identification and Control of Materials, Parts and Components

8.1 The QC Representative, working with the general contractor's representative, shall inform subcontractor's field supervision force of soil classifications in borrow areas as designated by the testing laboratory.

15.0 Non-Conforming Materials, Parts or Components

15.1 Compaction Equipment

15.1.1 The utilization of dissimilar compaction equipment outlined in exhibit D of 7220-C-210 shall be as follows:

15.1.2 The owner's testing laboratory shall be requested to perform tests on controlled test-fills within the embankment as required to determine pass requirements for each individual type compactor.

15.2 Backfill Materials

In the event that non-conforming materials are discovered in borrow areas by the testing laboratory, the contractor shall be notified for disposition. Non-conforming material shall be removed and/or disposed of as required by contractor.

16.0 Corrective Action

When corrective action is required the following outline of activities shall be followed:

16.1 Identification of source of non-conformance.

16.2 Evaluation of causes, conditions, present requirements and potential solutions.

16.3 Implementation of corrective action.

16.4 Contractor and/or testing laboratory analysis of problem is required if caused by external, uncontrollable sources, i.e. excessive precipitation causing moisture content of cohesive soils to exceed acceptance criteria and preclude conformance to compaction requirements.



- 16.5 When internal corrective action is required, it shall be documented for review and concurrence by the QA Manager. If the causes of non-conforming conditions are external and outside the specified jurisdiction of the subcontractor, recommended corrective action shall be requested of the contractor and/or his agent, and shall be concurred with by Canonie site quality control.
- 16.6 Documentation as required by owner shall be maintained in accordance with document control procedures.
- 17.0 Quality Control Records shall be compiled and submitted to Bechtel for their review and retention. Copies shall be maintained by Canonie Construction Co. and shall include related data such as qualifications of personnel, procedures, and equipment. Consistent with applicable regulatory requirements, the owner/contractor shall establish requirements concerning record retention and turn-over, such as record detail and type, and systems effected. Canonie Construction Co. Quality Assurance shall be notified in writing of any and all changes in documentation requirements.
- 17.1 The following forms shall be used to document the implementation of quality program on site.
- 17.1.1 Lift Thickness Control - Figure 2  
By determining elevation before and after placement operations from grade stakes, the QC Engineer shall determine the lift thickness achieved. He will prepare a report from information listing the following data:
- |                |        |
|----------------|--------|
| Observation    |        |
| Zone           |        |
| Work Location  |        |
| Size of Area   |        |
| Elevation(s):  | Before |
|                | After  |
| Lift Thickness |        |
| Date           |        |
- These random lift thickness checks shall be performed on an average of two areas daily depending on the working area conditions and the materials classification.
- 17.1.2 Compaction - Figure 3  
On a daily basis the QC Engineer shall prepare



a report for each zone and work area listing the following information: date, shift, weather, features, foreman, station, offset, elevation obtained, results of roller speed checks, equipment numbers, type, and frequency checks including vibration rate checks and time taken, and load counts.

17.1.3 Borrow Acceptance - Figure 4

The QC Engineer will obtain classification of material from the Bechtel representative and/or the testing laboratory.

17.1.4 Deficiency - Corrective Action - Figure 5

When notified by the Bechtel representative that a deficiency exists the QC Engineer shall note the date, time, feature, location, shift, foreman, elevation, and type of deficiency, ie. failing test. He shall notify the project manager or his representative and corrective actions shall be implemented. After corrective action implementation, a new test shall be performed and the results noted. Where necessary, further corrective action shall be instituted.

17.2 Quality Assurance/Control Records

All the aforementioned reports shall be compiled and submitted to Bechtel for their review and retention. Copies shall be maintained on file by Canonie Construction Co.

18.0 Audits

A system of planned, periodic, and documented internal audits has been established to verify compliance with all aspects of the accepted quality assurance program.

18.1 Audits shall be performed in accordance with written check lists by personnel qualified and trained in the performance of audits and familiar with the scope of work being performed.

18.2 Audit personnel shall be selected to preclude the possibility of personnel participating in audit activities in areas where they have direct responsibility.

18.3 Audit results are documented and reviewed by management personnel having responsibility for the areas being audited.

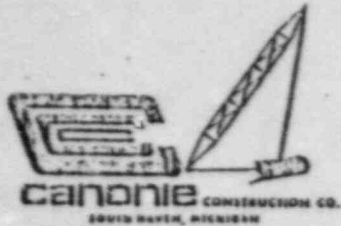
18.4 Corrective action is implemented to correct deficiencies revealed by audit activities, and to correct system inadequacies determined to be the cause for significant conditions adverse to quality.

18.5 Audit results and corrective actions are reviewed by upper management to determine the effectiveness of the audit program in correcting conditions adverse to quality and to verify the implementation of corrective action.



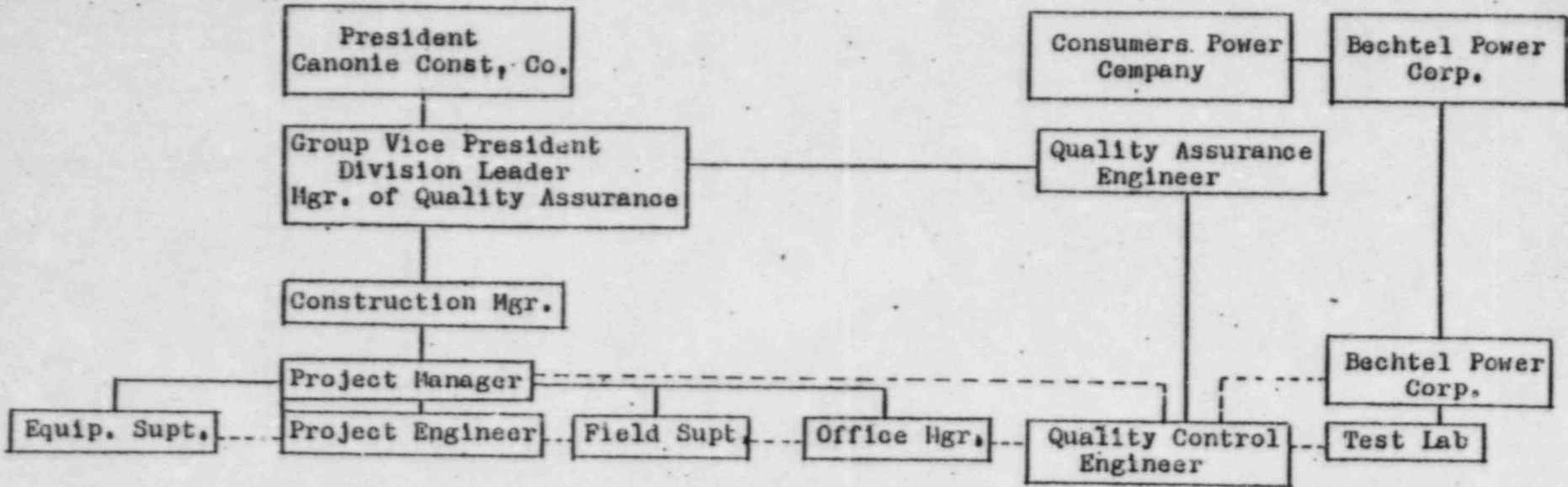
Page 8-A of 13

- 18.6 Where necessary to establish objective evidence of implementation, corrective action shall be verified by the performance of re-audits of those areas previously determined to be non-conforming.



Midland Station Units 1&2

Plant Foundation Excavation & Cooling Pond Dikes



Page 9 of 13

\_\_\_\_\_ Direct Responsibility  
 - - - - - Communication

Figure 1  
 Rev. 3, dated 4/5/77



Figure 2  
Rev. 1, 7/26/73

MIDLAND NUCLEAR UNITS 1&2  
CANONIE CONSTRUCTION CO.

P.M. \_\_\_\_\_  
G.S. \_\_\_\_\_  
F.S. \_\_\_\_\_  
\_\_\_\_\_

LIFT THICKNESS CHECK

OBSERVATION NUMBER: \_\_\_\_\_  
ZONE: \_\_\_\_\_  
STATION: \_\_\_\_\_ TO STATION: \_\_\_\_\_  
OFFSET: \_\_\_\_\_

DATE: \_\_\_\_\_  
LENGTH: \_\_\_\_\_  
WIDTH: \_\_\_\_\_

ELEVATION:	BEFORE	_____	AFTER	_____	LIFT THICKNESS	_____
	BEFORE	_____	AFTER	_____	LIFT THICKNESS	_____
	BEFORE	_____	AFTER	_____	LIFT THICKNESS	_____
	BEFORE	_____	AFTER	_____	LIFT THICKNESS	_____

AVERAGE LIFT THICKNESS \_\_\_\_\_  
\_\_\_\_\_

REMARKS/SKETCH:

BY: \_\_\_\_\_  
CANONIE CONSTRUCTION CO.  
QC REPRESENTATIVE



Figure 3  
Rev. 1, 7/26/73

MIDLAND NUCLEAR UNITS 1&2  
CANONIE CONSTRUCTION CO.

P.M. \_\_\_\_\_  
G.S. \_\_\_\_\_  
P.S. \_\_\_\_\_

FILL PLACEMENT QA-QC DAILY REPORT

FEATURE:

- ( ) EMERGENCY COOLING POND BERM
- ( ) PLANT AREA FILLS
- ( ) R/R EMBANKMENT
- ( ) LAYDOWN AREA
- ( ) COOLING POND DIKE

DATE: \_\_\_\_\_  
SHIFT: \_\_\_\_\_  
WEATHER: \_\_\_\_\_  
FOREMAN: \_\_\_\_\_  
ELEVATION: \_\_\_\_\_  
STATION: \_\_\_\_\_ TO STA: \_\_\_\_\_  
OFFSET: \_\_\_\_\_  
MOISTURE TESTS: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

ZONE:

- ( ) 1      ( ) 4
- ( ) 1-A    ( ) 4-A
- ( ) 2      ( ) 5
- ( ) 3      ( ) 6

LOAD COUNT \_\_\_\_\_

COMPACTION EQUIPMENT:

EQUIP. NO.	TYPE	FREQUENCY	TIME	SPEED
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

REMARKS/SKETCH:

BY: \_\_\_\_\_  
CANONIE CONSTRUCTION CO.



Figure 4  
Rev. 2, 4/12/74

Page 12 of 13

MIDLAND NUCLEAR UNITS 1&2  
CANONIE CONSTRUCTION CO.

P.M. \_\_\_\_\_  
G.S. \_\_\_\_\_  
F.S. \_\_\_\_\_

BORROW PIT ACCEPTANCE

AREA:

- COOLING POND
- DIKE FOUNDATION

DATE: \_\_\_\_\_  
GRID LOCATION: \_\_\_\_\_

MATERIAL:

- IMPERVIOUS ZONE 1
- IMPERVIOUS ZONE 1-A
- RANDOM

APPROXIMATE ELEV: \_\_\_\_\_

SKETCH:

The above area has been found to contain a suitable amount of material conforming to the requirements of the specification and, therefore, has been classified a borrow area.

It is understood that the borrow pit shall remain so designated until there occurs a marked change in the characteristic of the excavated materials.

REMARKS: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

BY: \_\_\_\_\_  
BECHTEL POWER CORP.

BY: \_\_\_\_\_  
CANONIE CONSTRUCTION CO.



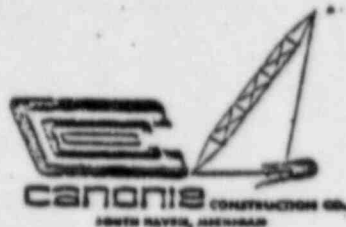


Figure 5  
Rev. 1. 7/26/73

Page 13 of 13

MIDLAND NUCLEAR UNITS 1&2  
CANONIE CONSTRUCTION CO.

P.M. \_\_\_\_\_  
G.S. \_\_\_\_\_  
F.S. \_\_\_\_\_

DEFICIENCY CORRECTIVE ACTION REPORT

DATE: \_\_\_\_\_ TIME: \_\_\_\_\_ SHIFT: \_\_\_\_\_  
FEATURE: \_\_\_\_\_ FOREMAN: \_\_\_\_\_  
LOCATION: \_\_\_\_\_ ELEVATION: \_\_\_\_\_  
DEFICIENCY: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

CORRECTIVE ACTION: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

SUGGESTED PREVENTATIVE MEASURES: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

CORRECTIVE ACTION QUALITY ASSURANCE:  
TESTING: \_\_\_\_\_  
\_\_\_\_\_  
OTHER: \_\_\_\_\_  
\_\_\_\_\_

SKETCH (IF REQ'D):

BY: \_\_\_\_\_  
BECHTEL POWER CORP.

BY: \_\_\_\_\_  
CANONIE CONSTRUCTION CO.

DATE: \_\_\_\_\_

The Quality Assurance Program

They should only be working with the Quality Control Program.

Section 2.5 "Project Communication"

States in part, "Conversely the Quality Control staff shall inform~~X~~ the Quality Assurance Engineer and staff or the Vice President-Manager of Quality Assurance the problems that arise in the daily execution of the Quality Control Program". This conflicts with ~~XXXXX~~ Section 2.2<sup>4</sup> "Manager of Quality Assurance" which states in part, "As such, the Quality Assurance staff will be directly responsible to~~X~~ this individual for the reporting of all quality-related problems". Section 3.1<sup>8</sup> "Quality Assurance Standards" states, "All activities within Canonie that are quality-related shall be governed by written procedures. These procedures shall take the form ~~IX~~ of this ~~X~~ Quality Assurance Manual or, as previously mentioned, manuals of practice for specific work items". This "or" should be "and".

Section 1.0 ~~X~~ "Introduction"

Last ~~XX~~ sentence on page 1-1 states, "The Quality Assurance Program described in this manual is fully endorsed by the management of Canonie Construction Company". Define management.

Section 3.1 "Quality Assurance Standards"

Last sentence ~~XXX~~ on page 3-1 states, "However, Quality Control ~~XXXXXXXXXX~~ standards shall be subject to review and approval ~~X~~ by the manager of Quality Assurance or his designated Quality Assurance personnel prior to implementation". This contradicts Section 2.2<sup>8</sup> "Manager of Quality Assurance" which states in part, "Further, that a manager of Quality Assurance is responsible for the preparation and approval of procedures or standards ~~IX~~ used by the Quality Assurance and Quality Control staffs". Section 3.1 "Quality Assurance Standards" first paragraph on page 3-2 ~~XXXX~~ states in part, "Activities which may be routinely performed by Canonie as part of the inspection services on ~~the~~ <sup>a project</sup> ~~purpose~~ such as concrete testing, structural earthwork,

Section 3.1 "Quality Assurance Standards" (Contd)

control or reinforcement testing shall, whenever possible, be conducted to recognized standards". This statement has to be more specific.

Section 3.2.1 "Control of ~~XXXXX~~ Copies"

~~XXX~~ States in part, "The Quality Assurance Manual and manuals of practice shall be numbered with a distribution list of copy holders maintained by the manager of Quality Assurance or member of the Quality Assurance staff". The wording of this statement should be clearer. Also, I feel that the manager of Quality Assurance should keep the distribution ~~XXXX~~ list.

Section 3.2.1 goes on to state, "Control of copies shall be so that in the event of revision all copy holders may be presented the revision and also to withdraw ~~XX~~ copies if necessary". This statement has ~~XX~~ to be more specific.

Section 3.2.3 "Revision of Documents"

First

~~XXXXX~~ ~~XXXXX~~ paragraph states in part, "As a minimum, the Quality Assurance Manual and the manuals of practice shall be reviewed by the manager of Quality Assurance or designated member of the Quality Assurance staff ~~for~~ external organization on a yearly basis. Such reviews will be documented as Quality Assurance records". What will be ~~XXXXXX~~ included in this review?

Section 3.2.3 "Revision of Documents"

First

~~XXXX~~ paragraph on page 3-4 states in part, "The revision shall be signed and dated ~~X~~ by the copy holder and promptly returned to the Manager of Quality Assurance". This should read, ~~XXXXXX~~ "The revision receipt shall be signed and dated". Also, it seems that the manager of Quality Assurance should be the one that retains the distribution list.

Section 3.2.3 "Revisions of Documents"

Last sentence of this section on page 3-4 states, "Finally to complete the revision a new approval sheet shall be issued which ~~INDICATES~~ indicates the revision number and/or date and its acceptance by the appropriate members of Canonie Management".

State who the appropriate members of Canonie Management are.

Section 3.3 "Quality Assurance Audits"

States in part, "Internal audits to verify compliance with the ~~XXXXXXXXXXXX~~ Quality Assurance/Quality Control program by members of the Quality Control staff..."

I thought the Quality Control staff ~~is~~ was in charge of implementing Quality Control Programs not the Quality Assurance Program.

Section 3.3 goes on to state, "Cooperation with ~~XXXXXXXXXX~~ clients, owners, or regulatory agents who are auditing the work performed by Canonie..." How does Canonie conduct or participate in this type of audit?

Section 3.1 "Quality Assurance Standards"

Third paragraph states in part, "Quality Control standards which will generally be working or testing procedures or specifications pertinent to a generic activity or project may be prepared by either Quality Control or ~~the~~ Quality Assurance personnel or external organization. However, Quality Control standards ~~is~~ shall be subject to review and approval by the ~~the~~ manager of Quality Assurance or ~~XXXXXX~~ designated Quality Assurance personnel prior to implementation". Quality Control standards that are prepared by Quality Assurance personnel should not be approved by Quality Assurance personnel. Also ~~in~~ 3.3.1 "Quality Assurance Internal Audits" states in part, "The Manager of Quality Assurance shall appoint a Quality Assurance Engineer or an external organization to perform the function of <sup>the</sup> Quality Assurance Engineer". If the Quality Control standard is <sup>prepared</sup> ~~approved~~ by an external organization, <sup>the</sup> review and approval should not be by the Quality Assurance <sup>Engineer</sup> ~~who~~, in fact, is the external organization.

Section 3.3.1 'Quality Assurance Internal Audits'

~~XXXXXX~~ Paragraph 4 states in part, "Further, additional audits may be required if ~~XX~~ activities related to the Quality Control Program are initiated or completed between quarterly audits. It is the intention of the Internal Audits to not only provide periodic evidence of compliance with the ~~XXXXXXXXXXXX~~ Quality Assurance Program". This section states Quality Control Program and Quality Assurance Program. What is the difference between these programs?

Section ~~XXX~~ 3.4.1 "Audit Reports and Corrective Action"

States in part, "Issuance of the audit report~~X~~ as described in the following ~~XXXX~~ and paragraph shall be in a timely manner ~~XXX~~ unless prevented by scheduling difficulties should be within ten days ~~XX~~ of the completion of the audit~~X~~". What ~~XXXXXXXXXX~~ scheduling difficulties are foreseen?

Section 3.3.1 "Quality Assurance Internal ~~XXXXXX~~ Audits"

Third paragraph states in part, "Because ~~XXXXXX~~ quarterly audits are scheduled, the Quality Control and Project staffs will be notified of their occurrence~~X~~". Who are the project staffs?

First paragraph on page 3-9 states in part, "A Project Quality Assurance record". Record is spelled reocrd. This paragraph goes on to state in part, "After approval of the audit report by the Manager, copies of it shall be submitted to the Construction Manager, the Onsite Manager, and the Quality Control Engineer". Why aren't ~~XXXXXX~~ copies submitted to Bechtel?

Page 3-10, second paragraph states in part "Copies of the closure statement shall also be issued to the Construction Manager, the Onsite Project Manager, and Quality Control Engineer". Why isn't a copy sent to Bechtel?

Section 3.4.2 "Maintenance of Records"

States in part, "The Project Quality Assurance ~~XXXX~~ records shall include the audit schedule, audit reports, audit checklists, verifications of corrective action, audit closure statements and objective evidence that other Quality Assurance activities such as <sup>the</sup> training of personnel and ~~XXXX~~ review of procurement & documents have ~~XX~~ been performed". Contrary to this statement, there are other Project Quality Assurance records such as is found on page 3-5 second to last paragraph, page 3-9 first paragraph, and Section 3.2.3 last sentence of the first paragraph.

Section 3.4.2 "Maintenance of Records"

Will the maintenance of records be in accordance with ANSI N45.2.9?

in

Section 3.6 "Training of Personnel ~~XXXXXXXXXX~~ Quality Assurance/Quality Control Activities"

States in part, "This will include a review of the pertinent portions of the Quality Assurance Program as contained in the Canonie Quality Assurance Manual, a review of the Quality Control aspects which would include both administrative and technical aspects of the Quality Assurance Manual and the pertinent manuals of practice".

Define pertinent.

/Quality Control

Section 3.6 "Training of Personnel in Quality Assurance ~~XXXXXXXXXX~~ Activities"

Last paragraph on page 3-13 states in part, "The Manager of Quality ~~XXXXXXXX~~ Assurance has the right to approve or prevent the assignment of ~~XXXXXXXX~~ personnel to Quality Control functions". What about the assignment of personnel <sup>to</sup> Quality Assurance functions?

First ~~XXXXXXXX~~ paragraph on page 3-14 states, "The requirements for the Quality Assurance Engineer". What ~~X~~ are the requirements for the Quality Assurance staff?

X ---

CONSUMERS POWER COMPANY  
**RECEIVED**  
DEC 21 1976  
FIELD QUALITY ASSURANCE  
MIDLAND, MICHIGAN

Bechtel Power Corporation

Post Office Box 2167  
Midland, Michigan 48640



December 16, 1976

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

Attention: J. Corley

Job 7220 Midland Project  
Canonie Construction Co.  
QA Manual Dated 8-16-76  
BCCC-2215

Dear Mr. Corley:

We are reviewing the subject manual to assure compliance with program requirements. A copy of this manual is hereby submitted for your concurrent review and comment.

May we have your comments by January 14, 1977?

Very truly yours,

*[Handwritten signature]*  
J. F. Newgen

JFN/JV/skd

Attachment

*after contacting E. [unclear] on 12-13-77  
has signed off letter because [unclear]*

JLC	-6
REW	
ORX	
DEH	
WHB	
RGW	
C. B.	
File	
Return	

x  
3.1/ Note about QC standards which might be prepared by QC

- 3-5 2<sup>ND</sup> to last para. QA records  
3.2.3 last sent, first para. QA records  
3-9 1<sup>ST</sup> para. Audit report project QA record  
~~3-11~~ 3-12 last para. - Poss. QA record  
3-13 ~~2<sup>ND</sup>~~ 2<sup>ND</sup> to last para. Proj. QA record  
3-15 2<sup>ND</sup> to last Poss. report - QA record  
3-16 last para. QA records  
4-5 second to last para. of sec. 4.5 QA records  
4-9 QC doc.  
4-10 QC doc. (1<sup>ST</sup> para.)

4.75  
9.50





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G.E.J.

SUPPLIER  
QUALITY ASSURANCE SYSTEM  
EVALUATION CHECK SHEETS



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Company

SUPPLIER DATA:

SURVEY DATA:

NAME: <u>Canonie Const. Co.</u>	DATES:
FACILITY ADDRESS:	SURVEY BY:
CITY & STATE:	STATED SYSTEM LEVEL:
ZIP CODE:	EVALUATED SYSTEM LEVEL:
PHONE NO:	QA SYSTEM MEETS RCQTS:

FACILITY INFORMATION:

PRINCIPAL PRODUCT OR SERVICE: \_\_\_\_\_

WORK DISTRIBUTION:

NUCLEAR \_\_\_ %    NON-NUCLEAR \_\_\_ %

CIVIL \_\_\_ %    ELECTRICAL \_\_\_ %    MECHANICAL \_\_\_ %    I&C \_\_\_ %

UTILITIES \_\_\_ %    GOVERNMENT \_\_\_ %    OTHER \_\_\_ %

CODE STAMPS AND AUTHORIZATIONS: \_\_\_\_\_

NO OF INSPECTORS (I) \_\_\_\_\_ NO OF PRODUCTION WORKERS (P) \_\_\_\_\_ RATIO (I/P) \_\_\_\_\_

TOTAL NO OF PERSONNEL IN QUALITY ASSURANCE (INSPECTORS INCLUDED) \_\_\_\_\_

TOTAL NO OF PERSONNEL AT FACILITY INCLUDING QA \_\_\_\_\_

KEY SUPPLIER PERSONNEL:

SENIOR COMPANY OFFICIAL:	_____
SENIOR QA DEPT OFFICIAL:	_____
OTHER KEY COMPANY PERSONNEL:	_____
	_____
	_____

SURVEY TEAM INFORMATION:

	NAME	TITLE	DISCIPLINE
TEAM LEADER:			
TEAM MEMBER:			





1. What is the basis for the Supplier's QA Program? 10CFR50 Appendix B where it applies to scope of work, ANSI, ASTM & ACI

2. Is program basis a written Company policy? QA Manual is accepted as a company policy

3. Basic QA Program Documents (Manuals)

	Title	Rev	Date	Status*	
				4	5
a. Umbrella*	<u>Quality Assurance Manual</u>		<u>8/16/76</u>		<u>✓</u>
b. Design					
c. Procurement					
d. Fabrication					
e. Construction					
f. Inspection					
g. Testing					
h. Auditing					

6. Are lower tier implementing manuals in use? (If yes, list.)

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

7. Has any portion of the work of establishing and executing the QA Program been delegated to others? (If yes, describe.)

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

\*3a. The overall governing and policy setting QA Manual and Program.

\*4. Are QA Program documents up to date?

\*5. Are QA Program documents approved by responsible personnel?





ITEM	QA PROGRAM EVALUATION CRITERIA	STATEMENT LOCATION	LEVEL & ADEQUACY		COMMENTS
			B	N	
1.0	ORGANIZATION (Contd)				
.7	The person or organization responsible for defining the overall effectiveness of the QA program:	p 2.4 sec 2.3		✓	
	a. Shall be designated;			✓	
	b. Shall be independent from the pressures of production; <sup>p 2.3</sup> <del>sec 2.1</del>	p 2.4 sec 2.4		✓	With exception of surveying and synthesis of backfill in waste, same; remain. have 2. 3. 4. 5.
	c. Shall have direct access to responsible management at a level where appropriate action can be required; and	p 2.4 sec 2.3		✓	
	d. Shall report regularly on the effectiveness of the program. (-/3-5)	p 3.5 sec 3.3.1		✓	

Section 1.0 Summary Comments



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SECTION : 2.0 QUALITY ASSURANCE PROGRAM

ITEM	QA PROGRAM EVALUATION CRITERIA	STATEMENT LOCATION	LEVEL & ADEQUACY		COMMENTS
			B	N	
2.0	QUALITY ASSURANCE PROGRAM				
1.	Supplier shall establish a QA program that complies with (ABC/N45.2). (2-1/2-1)	SC 3.1	✓	✓	
2.	Documentation of QA program shall be by:	1-1 sec 1.0			
	a. Written policies;		✓	✓	Quality Assurance Manual Manuals of Practice
	b. Procedures; or		✓	✓	
	c. Instructions. (2-2/-)		✓	✓	
3.	Plans for this program shall be carried out for the life of the contract. (2-2/-)	1-1 sec 1.0	✓	✓	
4.	Identify items or service to be covered by the QA program. (2-3/2-5)				Quality Assurance Manual is too general to address this item
5.	Identify major organizations participating in program and their designated functions. (2-3/2-4)	Cover sheet in manual says CHRONIE Const Co	✓	✓	
6.	QA program provides control over activities affecting the quality of the identified items or services to the extent consistent with their importance to safety, reliability and performance. (2-4/2-6, 7, 8)				
7.	Activities affecting quality shall be accomplished under suitably controlled conditions. Controlled conditions include:				
	a. Use of appropriate equipment;				
	b. Suitable environmental conditions for accomplishing the activity, ie, adequate cleanliness; and				
	c. Assurance that prerequisites for the given activity have been satisfied. (2-5, 6/2-11, 12)	P 30 Sec 3.3.1	✓	✓	
8.	Program shall take into account the need for special:				
	a. Controls;	P 4-10 Sec 4.3	✓	✓	
	b. Processes;	P 4-10 Sec 4.3			
	c. Test Equipment;				
	d. Tools; and				
	e. Skills to attain required quality. (2-7/2-13)	P 4-10 Sec 4.3	✓	✓	



ITEM	QA PROGRAM EVALUATION CRITERIA	STATEMENT LOCATION	LEVEL & ADEQUACY		COMMENTS
			S	N	
2.0	QUALITY ASSURANCE PROGRAM (Contd)				
.9	Program shall take into account the need for verification of quality by inspection and test. (2-7/2-13)	PA.3 Sec 4.4	✓	✓	
.10	Program shall provide for indoctrination and training of personnel performing activities affecting quality as necessary to assure suitable proficiency is achieved and maintained. (2-8/2-10)	P 3.13 Sec 3.6	✓	✓	No mention of maintaining proficiency other than regular management review in QA. Seems adequate to me
.11	Supplier shall regularly review the status and adequacy of his entire QA program. (2-9/2-14)	P 3.15 Sec 3.7	✓	✓	
.12	Management of organizations participating in the QA program shall review status and adequacy of that part of QA program which they are executing. (2-10/2-14)	P 3.16 Sec 3.7	✓	✓	

Section 2.0 Summary Comments:

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SECTION 3.0 DESIGN CONTROL

N/A

ITEM	QA PROGRAM EVALUATION CRITERIA	STATEMENT LOCATION	LEVEL & ADEQUACY		COMMENTS
			B	N	
3.0	DESIGN CONTROL				
.1	Measures shall be established to assure that applicable specified design requirements, such as design bases, regulatory requirements, codes and standards are correctly translated into specs, drawings, procedures and instructions. (3-1/4-1)				
.2	Measures shall include provisions to assure that appropriate quality standards are specified and included in design documents. (3-2/4-2)				
.3	Changes or deviations from design requirements or quality standards shall be identified, documented and controlled. (3-2/4-3)				
.4	Measures shall be established for selection and review for suitability of application of materials, parts, equipment and processes that are essential to the safety-related functions of the product. (3-3/4-6)				
.5	Measures shall be established for the identification and control of design interfaces and for coordination among participating design organizations. (3-4/4-7)				
.6	Measures shall include the establishment of procedures among participating design organizations for review, approval, release, distribution and revision of documents involving design interfaces. (3-5/4-8)				
.7	Design control measures shall provide for verifying or checking adequacy of design such as performance of design review, by the use of alternate or simplified calculational methods, or by performance of a suitable testing program. (3-6/4-9)				
.8	The verifying or checking process shall be performed by individuals or groups other than those who performed original design, but may be from the same organization. (3-7/4-10)				





ITEM	QA PROGRAM EVALUATION CRITERIA	STATEMENT LOCATION	LEVEL & ADEQUACY		COMMENTS
			S	N	
4.0	PROCUREMENT DOCUMENT CONTROL				
.1	Measures shall be established to assure that applicable regulatory requirements, design bases and other requirements which are necessary to assure adequate quality are suitably included or referenced in the documents for procurement of items and services, whether purchased by the seller or by its subcontractors. (4-1/5-1)	P 3-11 S 3.5	✓	✓	
.2	Procurement documents shall include provisions for the following, as applicable:				
	a. Identification of quality assurance requirements and the elements of the program applicable to the items or services procured.	P 3-12 S 3.5		✓	
	b. Drawings, specifications, codes and industrial standards with applicable revision data, test and inspection requirements, and special instructions and requirements, such as for designing, fabrication, cleaning, erecting, packaging, handling, shipping, and, if applicable, extended storage in the field; and for test equipment.				
	c. Provisions for access to the plant facilities and records for source inspection and audit.	P 3-12 S 3.5		✓	
	d. Records to be prepared, maintained, submitted or made available for review.	P 3-12 S 3.5		✓	
	e. Instruction on record retention and disposition.				
	f. Provisions for extending applicable requirements of procurement documents to lower tier subcontractors and suppliers including sellers and buyers access to facilities and records. (-/5-4, 5, 6, 7, 8)	P 3-12 S 3.5		✓	
.3	Sellers procurement documents shall require contractors or subcontractors to provide a quality assurance program consistent with pertinent provisions of the (AEC/R45.2) criteria. (4-2/5-3)	P 3-7 S 3.3.2	✓	✓	
Section 4.0 Summary Comments					



ITEM	QA PROGRAM EVALUATION CRITERIA	STATEMENT LOCATION	LEVEL & ADEQUACY		COMMENTS
			B	N	
5.0	INSTRUCTIONS, PROCEDURES & DRAWINGS				
.1	Activities affecting quality shall be prescribed by documented instructions, procedures or drawings. (5-1/6-1)	P2-4 Sec. 2.3 & 2.4	✓	✓	See Manual of Practice
.2	Activities shall be accomplished in accordance with these instructions, procedures or drawings. (5-1/6-1)	P2-4 Sec. 2.3 & 2.4	✓	✓	
.3	Instructions, procedures or drawings shall include appropriate quantitative or qualitative acceptance criteria for determining that important activities have been accomplished. (5-2/6-2)				Canonie should receive specifications from Contractor

Section 5.0 Summary Comments





ITEM	QA PROGRAM EVALUATION CRITERIA	STATEMENT LOCATION	LEVEL & ADEQUACY		COMMENTS
			B	N	
7.0	CONTROL OF PURCHASED MATERIAL, EQUIPMENT & SERVICES				
.1	Measures shall be established to assure that purchased material, equipment, and services, whether purchased directly or through contractors and subcontractors, conform to the procurement documents. (7-1/8-1)	P4-9 Section 4.7	✓	✓	Do not include purchase services
.2	The measures shall include provisions, as appropriate for:				
	a. Source evaluation and selection	P3-7 Sec 3.2 P4-9 Section 4.7	✓	✓	
	b. Objective evidence of quality furnished by the contractor or subcontractor.				
	c. Inspection at the contractor or subcontractor sources.	P3-7 Sec 3.2 P4-9 Sec 4.7	✓	✓	
	d. Examination of products upon delivery. (7-2/8-2)	P4-9 Section 4.7	✓	✓	
.3	Documentary evidence that material and equipment conform to the procurement requirements shall be available at the suppliers facility prior to use of such material and equipment. (7-3/8-6)	P4-9 Sec 4.7	✓	✓	Documentation of inspection of received purchased materials & equip. is maintained
.4	Documentary evidence shall be retained by the supplier sufficient to identify the specific requirements such as codes, standards, or specifications, met by the purchased material and equipment as required by procurement documents. (7-4/8-7)				
.5	Where not precluded by other requirements, such documentary evidence may take the form of written certifications of conformance which identify the requirements met by the items, provided means are available to verify the validity of such certifications. (-/8-A)				
.6	The effectiveness of the control of quality by contractors and subcontractors shall be assessed by the purchaser or designee at intervals consistent with the importance, complexity, and quantity of the product or services. (7-5/8-9)				
Section 7.0 Summary Comments					





ITEM	QA PROGRAM EVALUATION CRITERIA	STATEMENT LOCATION	LEVEL & ADEQUACY		COMMENTS
			B	N	
9.0	<b>CONTROL OF SPECIAL PROCESSES</b>				
.1	Measures shall be established to assure that special processes, including welding, heat-treating, cleaning, and nondestructive testing are controlled and accomplished by qualified personnel using qualified procedures in accordance with applicable codes, standards, specifications, criteria and other special requirements. (9-1/10-1, 2)	p 4-10 Sec 4.3	✓	✓	
.2	Documentation shall be maintained for currently qualified personnel, processes, or equipment in accordance with the requirements of pertinent codes and standards. (-/10-3)	p 4-10 Sec 4.3		✓	
.3	For special processes not covered by existing codes or standards, or where item quality requirements exceed the requirements of established codes or standards, the necessary qualifications of personnel, procedures, or equipment shall be defined. (-/10-4)				

Section 9.0 Summary Comments

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SECTION 10.0 INSPECTION ✓

ITEM	QA PROGRAM EVALUATION CRITERIA	STATEMENT LOCATION	LEVEL & ADEQUACY		COMMENTS
			B	N	
10.0	<b>DEFINITION</b>				
1	A program for inspection of activities affecting quality shall be established and executed by or for the organization performing the activity to verify conformance with the documented instructions, procedures, and drawings for accomplishing the activity. (10-1/11-1)	P2-4 Sec 2A	✓	✓	
2	a. Inspection shall be performed by individuals other than those who performed the activity being inspected. (10-2/11-2)				
	b. Such persons shall not report directly to the immediate supervisors who are responsible for the work being inspected. (-/11-3)	P2-2 Organizational chart		✓	
3	Examinations, measurements, or tests of materials or products processed shall be performed for each work operation where necessary to assure quality. (10-3/11-4)	P4-3 Sec. 4A	✓	✓	
4	If inspection of processed material or products is impossible or disadvantageous, indirect control by monitoring processing methods, equipment, and personnel shall be provided. (10-4/11-6)				
5	Both inspection and process monitoring shall be provided when control is inadequate without both. (10-5/11-7)				
6	Where a sample is used to verify acceptability of a group of items, the sampling procedure shall be based on recognized standard practices and shall provide adequate justification for the sample size and selection process. (-/11-5)				
7	If mandatory inspection hold points, which require witnessing or inspecting by the buyer's designated representative and beyond which work shall not proceed without the consent of its designated representative are required, the specific hold points shall be indicated in appropriate documents. (10-6/11-3)	P4-3 Sec 4A	✓	✓	Assume hold points are documented on inspection schedule
Section 10.0 Summary Comments					











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SECTION 17.0 NONCONFORMING MATERIAL, PARTS OR COMPONENTS



ITEM	QA PROGRAM EVALUATION CRITERIA	STATEMENT LOCATION	LEVEL & ADEQUACY		COMMENTS
			S	N	
15.0	NONCONFORMING MATERIAL, PARTS OR COMPONENTS				
.1	Measures shall be established to control materials, parts or components (services or activities) which do not conform to requirements in order to prevent their inadvertent use or installation. (15-1/16-1H, 8)	PA-444.5 Sec 4.5	✓	✓	
.2	Measures shall include as appropriate, procedures for identification, documentation, segregation, disposition, and notification to affected organizations. (15-2/16-2, 11)				
.3	Nonconforming items shall be reviewed and accepted, rejected, repaired or reworked in accordance with documented procedures. (15-3/16-3, 7)				
.4	The responsibility and authority for the disposition of nonconforming items shall be defined. (-/15-4)	PA-444.5 Sec 4.5		✓	
.5	Repaired and reworked items shall be reinspected in accordance with applicable procedures. (-/16-5)				
.6	Measures which control further processing, delivery, or installation of a nonconforming or defective item pending a decision on its disposition shall be established and maintained. (-/16-6)				
.7	Measures shall require documentation verifying the acceptability of nonconforming items which have the disposition of "repair" or "use as is." (-/16-9)				
.8	A description of the change, waiver, or deviation that has been accepted shall be documented to record the change and denote the as-built condition. (-/16-10)				
.9	Measures shall be established for determining nonconformance reportability to purchaser. (LOCFR 90.55 (e))				
Section 15.0 Summary Comments					



ITEM	QA PROGRAM EVALUATION CRITERIA	STATEMENT LOCATION	LEVEL & ADEQUACY		COMMENTS
			S	N	
16.0	CORRECTIVE ACTION				
.1	Measures shall be established to assure that conditions adverse to quality such as failures, malfunctions, deficiencies, deviations, defective material and equipment, and nonconformance are promptly identified and corrected. (16-1/17-1)	P4A#45 Sec 4.5	✓	✓	
.2	In the case of significant conditions adverse to quality, the measures shall assure that the cause of the condition is determined and corrective action taken to preclude repetition. (16-2/17-2)	P4S Sec 4.5	✓	✓	
.3	The identification of significant conditions adverse to quality, the cause of the condition, and the corrective action taken shall be documented and reported to appropriate levels of management. (16-3/17-3)	P4.#45 Sec 4.5	✓	✓	

Section 16.0 Summary Comments



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SECTION 17.0 QUALITY ASSURANCE RECORDS

ITEM	QA PROGRAM EVALUATION CRITERIA	STATEMENT LOCATION	LEVEL & ADEQUACY		COMMENTS
			B	N	
17.0	QUALITY ASSURANCE RECORDS				
.1	Sufficient records shall be maintained to furnish evidence of activities affecting quality. The records shall include at least the following:				
	a. Operating logs and the results of reviews.	p4-11 sec 4.9	✓	✓	
	b. Inspections	p4-11 sec 4.9	✓	✓	
	c. Tests <i>material testing reports</i>	p4-11 sec 4.9	✓	✓	
	d. Audits	p3.6-3.10 sec 3.4.1	✓	✓	
	e. Monitoring of work performance.				
	f. Material analyses. (17-1, 2/18-1, 2, 3)				
.2	Records shall include closely related data such as qualifications of:				
	a. Personnel	p 3-15 sec 3.6	✓	✓	
	b. Procedures	p4-11 sec 4.9	✓	✓	
	c. Equipment (17-3/18-4) <i>calibration records</i>	p4-4 sec 4.6	✓	✓	
.3	Inspection and test records shall, as a minimum, identify:				
	a. The inspector or data recorder.				See p4-4 sec 4.5
	b. The type of observation.				most of these items covered in weekly reports
	c. The results.				
	d. The acceptability.				
	e. The action regarding deficiencies noted.				
	f. The date of inspection or test. (17-4/18-34)				







Consumers  
Power  
Company

SECTION 18.0 AUDITS

ITEM	QA PROGRAM EVALUATION CRITERIA	STATEMENT LOCATION	LEVEL & ADEQUACY		COMMENTS
			S	N	
18.0	AUDITS				
.1	Comprehensive system of planned and periodic audits shall be carried out to:				
	a. Verify compliance with all aspects of the QA program. (18-1/19-1, 5)	P 3-4 Sec 3.3	✓	✓	
	b. Determine the effectiveness of the program. (18-1/19-7, 10, 11)	P 3-15 & 3-16 Sec 3.7	✓	✓	Done by Management Review of Program
.2	Audits should be conducted periodically or on a random, unscheduled basis, or both. It is desirable to conduct audits when one or more of the following conditions exist:				
	a. When it is necessary to determine the capability of a subcontractor's quality assurance program prior to awarding of contract or purchase order.	P 3-7 Sec 3.3.2		✓	
	b. When, after award of contract, sufficient time has elapsed for the implementation of the quality assurance program, and it is appropriate to determine that the organization is performing the functions as defined in the quality assurance program description, codes, standards, and other contract documents.				
	c. When significant changes are made in functional areas of the quality assurance program, including significant reorganizations and procedure revisions.				
	d. When it is suspected that safety, performance, or reliability of the item is in jeopardy due to deficiencies and nonconformances in the quality assurance program.				
	e. When a systematic, independent assessment of program effectiveness or item quality or both is considered necessary.				
	f. When it is considered necessary to verify implementation of required corrective actions. (- /19-13 to 19)	P 3-9 & 3-10 Sec 3.4.1		✓	

→ Continue monitoring in progress surveillance of subcontractors but does not note the conditions requiring for this audit



ITEM	QA PROGRAM EVALUATION CRITERIA	STATEMENT LOCATION	LEVEL & ADEQUACY		COMMENTS
			B	N	
18.0	AUDITS (Contd)				
.3	Audits shall be performed in accordance with written procedures or checklists by appropriately trained personnel not having direct responsibilities in the areas being audited. (18-2/19-2)	P 3-5 Sec 3.3 P 3-6 Sec 3.3.1 P 3-7 Sec 3.3.2	✓	✓	All audits
.4	An audit plan should be developed to provide information about the audit, such as the functional areas to be audited, the names and assignments of those who will perform the audit and the scheduling arrangements, and the method of reporting findings and recommendations. (- /19-12)				
.5	Responsible management shall take necessary action to correct the deficiencies revealed by the audit. (- /19-4)	P 3-9 Sec 3.4.1		✓	Internal Audit
.6	Audit results shall be documented and reviewed by management having responsibility in the area audited. (18-3/19-3)	P 3-8 Sec 3.4.1 P 3-9 Sec 3.4.1	✓	✓	Internal Audit
.7	Follow-up action, including reaudit of deficient areas, shall be taken where indicated. (18-4/19-8,9)	P 3-9 #3-10 Sec 3.4.1	✓	✓	

Section 18.0 Summary Comments

Bill Moore  
Tony Thompson  
John Moore  
Don Brown

inmate  
Sub.  
Prison 2A  
C.P.C. 2A

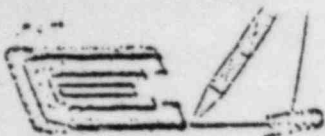
070

---

Tony Thompson - Sub.  
Bill Moore - Canonic

Meeting 4-1-77 10:30





CANONIE CONSTRUCTION CO. / P.O. BOX 509 / U.S. 31 & M-43 / SOUTH HAVEN, MICHIGAN 49090 / (616) 637-1171

May 3, 1977

RECEIVED

MAY 9 1977

BECHTEL POWER CORP.  
JOB 7220  
PER 15751 0210

Mr. John Church  
Subcontracts Department  
Bechtel Power Corporation  
P.O. Box 2167  
Midland, Michigan 48640

Subject: Consumers Power Company  
Midland Station Units 1 & 2  
Bechtel Power Corporation Subcontract #7220-C-210  
Plant Foundation Excavation and Cooling Pond Dikes  
Canonie Construction Co. Quality Assurance Program  
dated August 1976  
Addendum dated 4/5/77, Rev. 3

Reference: Contract Change Notice 44-P, Ser # C-210-B-190, dated 4/21/77  
Letter dated 6/29/76, J. P. Newgen to Canonie Construction Co.  
Letter dated 9/14/76, J. P. Newgen to J. McKane

Dear Sir:

In response to the referenced letters above, Canonie Construction Co. submits for your review, comment, and acceptance the attached addendum to the subject Canonie Construction Co. Quality Assurance Program. This addendum shall be applicable for all work covered by the above referenced subcontract for the scope of work defined in the referenced specification.

Work requiring the implementation of the Quality Assurance Program is defined in Exhibit D, Technical Specification for Plant Foundation Excavation and Cooling Pond Dikes, of the subject subcontract specification. The Quality related activities so defined are as follows:

- A. Placement of plant area backfill and berm backfill. Backfill is defined by section 13.2 of the referenced subcontract.
- B. Moisture control of the plant area and berm material to verify conformance to the provisions of section 12.6 of the referenced subcontract.
- C. Compaction requirements for backfill in the plant area and the berm to be in compliance with Bechtel requirements stated in section 13.7 and 12.8 of the referenced subcontract.

Mr. John Church  
Page 2  
May 3, 1977

Further, to assure the successful execution of the above referenced subcontract in compliance with all owner/architect/engineer-constructor requirements, the attached addendum shall be in effect until such time as it is revised or terminated in order to affect the successful implementation and completion of all work.

*W. R. Moore*

W. R. Moore  
Quality Assurance Engineer,  
Canonic Construction Co.

*W.R. Moore for J. K. McKane*

J. K. McKane  
Vice President,  
Earthmoving Division;  
Manager of Quality Assurance,  
Canonic Construction Co.

WRM/bw

Enclosures (1/1)

cc: J.K. McKane







Item I. changes:

Add to para. 2, section 1.0, Introduction:

The Quality Assurance manual shall be supplemented by Quality Control procedures written to clarify and further implement the Quality Assurance program of Canonie Construction Co. Prior to site implementation, these procedures shall be approved by the Manager of Quality Assurance, Canonie Construction Co. and the Contractor or appropriate owner's representative. All Quality Control procedures shall be controlled in the same manner as the Quality Assurance program and revisions and addenda shall be reviewed and approved in the same manner as originals. These procedures shall indicate the scope of activities covered therein, the personnel designated by said procedures with responsibilities by job title, and shall provide sufficient instructions to clearly indicate what activities are necessary to demonstrate compliance with the accepted Quality Assurance program.

Delete para. 3, section 2.4 as written and insert:

The Quality Control Engineer shall have the authority to stop the continuation of work that is deficient in characteristic, documentation, or procedure which renders the quality of an item unacceptable or indeterminant. This shall include, but not be limited to physical defects, test failures, incorrect or inadequate documentation, or deviation from prescribed processing, inspection or testing procedures.

Delete sentence 1, para. 4, section 3.1 as written, and insert:

Activities which may be routinely performed by Canonie Construction Co. as part of inspection services on a project, such as concrete testing, structural earthwork control or testing of reinforcement steel, shall be conducted to recognized standards or referenced specifications.

Delete sentence 4, para. 2, section 3.2.3 as written and insert:

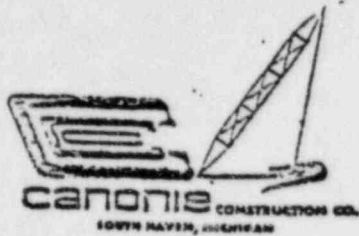
Revision receipts shall be signed and dated by the assignee, or designated representative, and returned to the Manager of Quality Assurance within 15 days of receipt.

Delete sentence 4, para. 3, section 3.2.3 as written and insert:

A new approval sheet, signed by the President, Canonie Construction Co. and the Manager of Quality Assurance, shall be issued to indicate the current revision number and date of the manual issue in effect. This shall indicate Canonie Construction Co. acceptance of the policies and procedures defined therein.

Delete sentence 2, para. 1, section 3.4.2 as written and insert:

A file of all Quality Assurance/Control records shall be maintained to comply with all owner/constructor contractually specified requirements. These records shall be maintained as required by



this manual and applicable code and regulatory requirements.

Delete sentence 2, para. 1, section 4.4 as written and insert:

For all the various activities included in the scope of work for the referenced specification,

Item II, Supplements:

1.0 Organization

The Canonie Construction Co. Quality Control Organizational interface with the Bechtel Power Corp. is shown in figure 1.

1.1 The Project Manager performs overall site supervision to ensure that construction schedules are maintained and that the work is performed in compliance with drawings and specifications. He coordinates work with the site Quality Control Engineer to assure compliance to the accepted quality program.

1.2 The QC Engineer has responsibilities and duties as follows:

1.2.1 He will document the classification of the borrow by the Testing Laboratory to the Project Manager for use by the Field Foreman.

1.2.2 Based on borrow selections he prepares daily reports verifying by station, by zone, the fill placement, the moisture control, and the compaction conformance necessary to meet specs.

1.2.3 In this function, he is completely mobile and will be available for comment from the General Contractor's inspection force. He will be in communication with the Project Manager to correct any deviations in the fill requirements as established by the project specifications.

1.2.4 The Quality Control Engineer has the authority to assure total compliance to the Quality Assurance/Quality Control program by all Canonie Construction Co. personnel.

1.3 The Field Superintendent shall initiate compliance with the borrow/cut programs as outlined by the QC Engineer through the Project Manager. He shall be responsible for reporting field production requirements to the Project Manager.

1.4 The Project Engineer shall work closely with the project manager and QC Engineer to establish survey and



control methods required to assure proper definition of zone fills and lift controls.

2.0 Quality Control Program

- 2.1 The Quality Control Team or member shall be responsible for quality control and documentation for all Q Listed areas as designated by contractor's and/or owner's specifications. The inspection unit shall assure that the project specifications are strictly enforced. Qualified and experienced personnel shall comprise the inspection force.
- 2.2 The Quality Control Engineer and/or his representative shall be responsible to the Canonie Construction Co. project QC manager and shall be independent of production, construction, scheduling and procurement.
- 2.3 The QC Engineer shall develop, in the course of his duties and as required, adequate forms, charts and logs to compile and assimilate required QC information and documentation of Q listed work.
- 2.4 All QC Records and Documentation shall be stored in a fire resistant filing cabinet. The records shall identify the inspector or data recorder, the activity monitored, date of inspection or test, test results, acceptability and any corrective action required or taken. This information shall be supplemented as required.
  - 2.4.1 The On Site Records shall be filed in an orderly fashion and shall be readily identifiable and retrievable. Upon completion of construction work, records shall be turned over to the owner's operations group or his designated representative.
- 2.5 The QC Engineer shall assure that the proper zoned materials are delivered to the proper location and the proper compaction control is performed as required by the specifications.
- 2.6 The QC Engineer shall schedule his work so that all operations, reports, documentation and related items shall be available to the contractor and/or owner and to facilitate the establishment of a functional interface between the appointed testing laboratory, general contractor and field superintendents.
- 2.7 The QC Representative shall become familiar with the testing laboratory personnel testing methods and individual soil classification characteristics.



Page 5 of 13

2.8 The QC Engineer's level of authority shall be equal to the highest ranking production unit ie. supervisor or superintendent. The QC Engineer does not direct work forces, except through supervisory personnel, and then only in quality related areas to insure compliance with job specifications, procedures, and drawings.

6.0 Document Control

6.1 Index Card File System

6.1.1 Individual Card for Each DWG shall be maintained listing:

DWG Title and Number

Revision Number

Revision Date

Date Received

Number Received

Classification: Preliminary  
or Approved

Distribution: Stick Number or Name of Person  
drawing is issued to

6.2 A Drawing Summary List shall be maintained listing:

Stick Number

Drawing Number

Title

Revision and Date

Status: Preliminary  
or Approved

6.3 Drawing Awareness

New or revised drawing will be routed to assure all personnel concerned are aware of change. A list of document assignees shall be maintained to assure proper distribution.

6.4 Separate storage of Superseded Drawings and Specifications to Maintain Adequate Control shall be provided. All superseded documents shall be voided.

6.5 Document control shall not be confused with documentation control. It is not intended that document control shall be specifically a function of the quality control Engineer. An authorized agent of the QC Department may



perform the document control function. Documentation shall be a function of the QC Engineer and shall show all pertinent information as required by contractor's specifications.

8.0 Identification and Control of Materials, Parts and Components

8.1 The QC Representative, working with the general contractor's representative, shall inform subcontractor's field supervision force of soil classifications in borrow areas as designated by the testing laboratory.

15.0 Non-Conforming Materials, Parts or Components

15.1 Compaction Equipment

15.1.1 The utilization of dissimilar compaction equipment outlined in exhibit D of 7220-C-210 shall be as follows:

15.1.2 The owner's testing laboratory shall be requested to perform tests on controlled test-fills within the embankment as required to determine pass requirements for each individual type compactor.

15.2 Backfill Materials

In the event that non-conforming materials are discovered in borrow areas by the testing laboratory, the contractor shall be notified for disposition. Non-conforming material shall be removed and/or disposed of as required by contractor.

16.0 Corrective Action

When corrective action is required the following outline of activities shall be followed:

16.1 Identification of source of non-conformance.

16.2 Evaluation of causes, conditions, present requirements and potential solutions.

16.3 Implementation of corrective action.

16.4 Contractor and/or testing laboratory analysis of problem is required if caused by external, uncontrollable sources, i.e. excessive precipitation causing moisture content of cohesive soils to exceed acceptance criteria and preclude conformance to compaction requirements.



- 16.5 When internal corrective action is required, it shall be documented for review and concurrence by the QA Manager. If the causes of non-conforming conditions are external and outside the specified jurisdiction of the subcontractor, recommended corrective action shall be requested of the contractor and/or his agent, and shall be concurred with by Canonie site quality control.
- 16.6 Documentation as required by owner shall be maintained in accordance with document control procedures.
- 17.0 Quality Control Records shall be compiled and submitted to Bechtel for their review and retention. Copies shall be maintained by Canonie Construction Co. and shall include related data such as qualifications of personnel, procedures, and equipment. Consistent with applicable regulatory requirements, the owner/contractor shall establish requirements concerning record retention and turn-over, such as record detail and type, and systems effected. Canonie Construction Co. Quality Assurance shall be notified in writing of any and all changes in documentation requirements.
- 17.1 The following forms shall be used to document the implementation of quality program on site.
- 17.1.1 Lift Thickness Control - Figure 2  
By determining elevation before and after placement operations from grade stakes, the QC Engineer shall determine the lift thickness achieved. He will prepare a report from information listing the following data:
- |                |        |
|----------------|--------|
| Observation    |        |
| Zone           |        |
| Work Location  |        |
| Size of Area   |        |
| Elevation(s):  | Before |
|                | After  |
| Lift Thickness |        |
| Date           |        |
- These random lift thickness checks shall be performed on an average of two areas daily depending on the working area conditions and the materials classification.
- 17.1.2 Compaction - Figure 3  
On a daily basis the QC Engineer shall prepare



a report for each zone and work area listing the following information: date, shift, weather, features, foreman, station, offset, elevation obtained, results of roller speed checks, equipment numbers, type, and frequency checks including vibration rate checks and time taken, and load counts.

17.1.3 Borrow Acceptance - Figure 4

The QC Engineer will obtain classification of material from the Bechtel representative and/or the testing laboratory.

17.1.4 Deficiency - Corrective Action - Figure 5

When notified by the Bechtel representative that a deficiency exists the QC Engineer shall note the date, time, feature, location, shift, foreman, elevation, and type of deficiency, ie. failing test. He shall notify the project manager or his representative and corrective actions shall be implemented. After corrective action implementation, a new test shall be performed and the results noted. Where necessary, further corrective action shall be instituted.

17.2 Quality Assurance/Control Records

All the aforementioned reports shall be compiled and submitted to Bechtel for their review and retention. Copies shall be maintained on file by Canonie Construction Co.

18.0 Audits

A system of planned, periodic, and documented internal audits has been established to verify compliance with all aspects of the accepted quality assurance program.

18.1 Audits shall be performed in accordance with written check lists by personnel qualified and trained in the performance of audits and familiar with the scope of work being performed.

18.2 Audit personnel shall be selected to preclude the possibility of personnel participating in audit activities in areas where they have direct responsibility.

18.3 Audit results are documented and reviewed by management personnel having responsibility for the areas being audited.

18.4 Corrective action is implemented to correct deficiencies revealed by audit activities, and to correct system inadequacies determined to be the cause for significant conditions adverse to quality.

18.5 Audit results and corrective actions are reviewed by upper management to determine the effectiveness of the audit program in correcting conditions adverse to quality and to verify the implementation of corrective action.



Page 8-A of 13

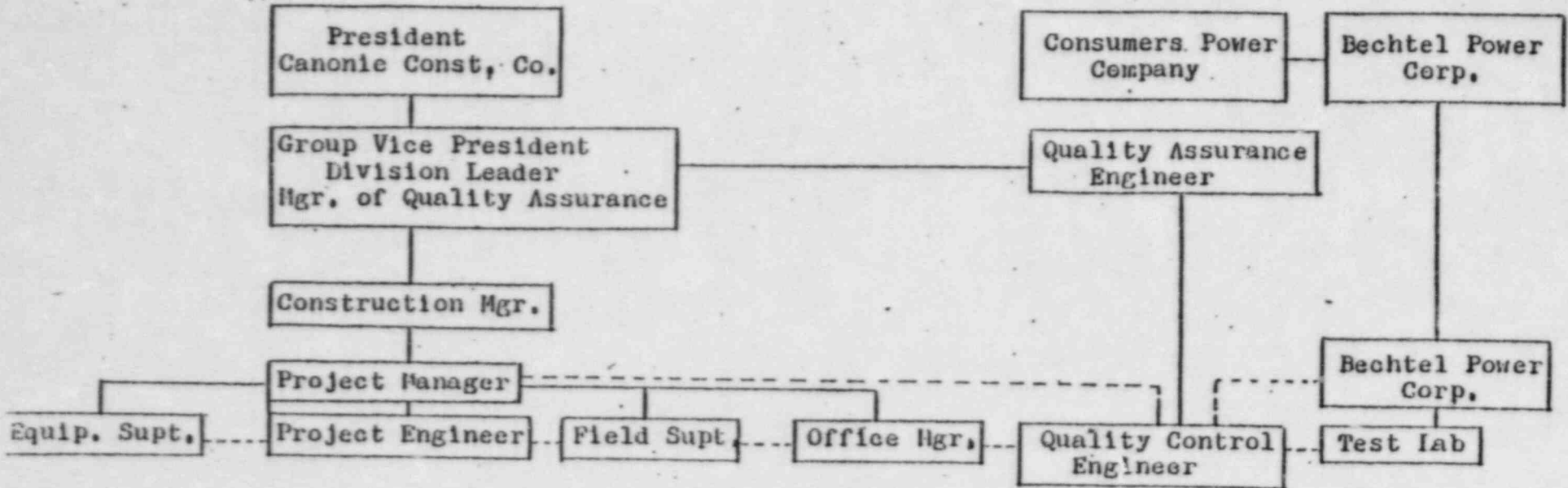
- 18.6 Where necessary to establish objective evidence of implementation, corrective action shall be verified by the performance of re-audits of those areas previously determined to be non-conforming.





Midland Station Units 1&2

Plant Foundation Excavation & Cooling Pond Dikes



Page 9 of 13

\_\_\_\_\_ Direct Responsibility

----- Communication

Figure 1  
Rev. 3, dated 4/5/77



Figure 2  
Rev. 1, 7/26/73

MIDLAND NUCLEAR UNITS 1&2  
CANONIE CONSTRUCTION CO.

P.M. \_\_\_\_\_  
G.S. \_\_\_\_\_  
F.S. \_\_\_\_\_  
\_\_\_\_\_

LIFT THICKNESS CHECK

OBSERVATION NUMBER: \_\_\_\_\_

DATE: \_\_\_\_\_

ZONE: \_\_\_\_\_

LENGTH: \_\_\_\_\_

STATION: \_\_\_\_\_ TO STATION: \_\_\_\_\_

WIDTH: \_\_\_\_\_

OFFSET: \_\_\_\_\_

ELEVATION:	BEFORE	_____	AFTER	_____	LIFT THICKNESS	_____
	BEFORE	_____	AFTER	_____	LIFT THICKNESS	_____
	BEFORE	_____	AFTER	_____	LIFT THICKNESS	_____
	BEFORE	_____	AFTER	_____	LIFT THICKNESS	_____

AVERAGE LIFT THICKNESS \_\_\_\_\_

REMARKS/SKETCH:

BY: \_\_\_\_\_  
CANONIE CONSTRUCTION CO.  
QC REPRESENTATIVE



Figure 3  
Rev. 1, 7/26/73

MIDLAND NUCLEAR UNITS 1&2  
CANONIE CONSTRUCTION CO.

P.M. \_\_\_\_\_  
G.S. \_\_\_\_\_  
P.S. \_\_\_\_\_

FILL PLACEMENT QA-QC DAILY REPORT

FEATURE:

- ( ) EMERGENCY COOLING POND BERM
- ( ) PLANT AREA FILLS
- ( ) R/R EMBANKMENT
- ( ) LAYDOWN AREA
- ( ) COOLING POND DIKE

DATE: \_\_\_\_\_  
 SHIFT: \_\_\_\_\_  
 WEATHER: \_\_\_\_\_  
 FOREMAN: \_\_\_\_\_  
 ELEVATION: \_\_\_\_\_  
 STATION: \_\_\_\_\_ TO STA: \_\_\_\_\_  
 OFFSET: \_\_\_\_\_  
 MOISTURE TESTS: \_\_\_\_\_

ZONE:

- ( ) 1      ( ) 4
- ( ) 1-A    ( ) 4-A
- ( ) 2      ( ) 5
- ( ) 3      ( ) 6

LOAD COUNT \_\_\_\_\_

COMPACTION EQUIPMENT:

EQUIR. NO.	TYPE	FREQUENCY	TIME	SPEED
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

REMARKS/SKETCH:

BY: \_\_\_\_\_  
CANONIE CONSTRUCTION CO



Figure 4  
Rev. 2, 4/12/74

Page 12 of 13

MIDLAND NUCLEAR UNITS 1&2  
CANONIE CONSTRUCTION CO.

BORROW PIT ACCEPTANCE

P.M. \_\_\_\_\_  
G.S. \_\_\_\_\_  
P.S. \_\_\_\_\_

AREA:

- COOLING POND
- DIKE FOUNDATION

DATE: \_\_\_\_\_  
GRID LOCATION: \_\_\_\_\_

MATERIAL:

- IMPERVIOUS ZONE 1
- IMPERVIOUS ZONE 1-A
- RANDOM

APPROXIMATE ELEV: \_\_\_\_\_

SKETCH:

The above area has been found to contain a suitable amount of material conforming to the requirements of the specification and, therefore, has been classified a borrow area.

It is understood that the borrow pit shall remain so designated until there occurs a marked change in the characteristic of the excavated materials.

REMARKS: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

BY: \_\_\_\_\_  
BECHTEL POWER CORP.

BY: \_\_\_\_\_  
CANONIE CONSTRUCTION CO.



Figure 5  
Rev. 1, 7/26/73

Page 13 of 13

MIDLAND NUCLEAR UNITS 1&2  
CANONIE CONSTRUCTION CO.

P.M. \_\_\_\_\_  
G.S. \_\_\_\_\_  
F.S. \_\_\_\_\_

DEFICIENCY CORRECTIVE ACTION REPORT

DATE: \_\_\_\_\_ TIME: \_\_\_\_\_ SHIFT: \_\_\_\_\_

FEATURE: \_\_\_\_\_ FOREMAN: \_\_\_\_\_

LOCATION: \_\_\_\_\_ ELEVATION: \_\_\_\_\_

DEFICIENCY: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

CORRECTIVE ACTION: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

SUGGESTED PREVENTATIVE MEASURES: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

CORRECTIVE ACTION QUALITY ASSURANCE:  
TESTING: \_\_\_\_\_  
\_\_\_\_\_  
OTHER: \_\_\_\_\_  
\_\_\_\_\_

SKETCH (IF REQ'D):

BY: \_\_\_\_\_  
BECHTEL POWER CORP.

BY: \_\_\_\_\_  
CANONIE CONSTRUCTION CO.

Bechtel Power Corporation

Post Office Box 2167  
Midland, Michigan 48640



May 13, 1977

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

Attention: Mr. J. L. Corley

Job 7220 Midland Project  
Subcontract 7220-C-210  
Addendum to Canonic Con-  
struction Company Q.A.  
Program Dated 4-5-77,  
Rev. 3  
BCCC-2523

Reference: Bechtel Power Corporation Letter Number BCCC-2215  
Dated December 16, 1976 to J. L. Corley

Dear Mr. Corley:

We are reviewing the subject addendum to Canonic Construction Company Q.A. Program dated August 26, 1976 to assure compliance with program requirements.

A copy of this addendum is hereby submitted for your concurrent review and comment.

May we have your comments by May 30, 1977.

Very truly yours,

  
J. F. Newgen

JFN/JCC/JV/djm

Enclosure

cc: J. Connolly  
T. C. Cooke  
G. L. Richardson



CANONIE CONSTRUCTION CO. / P.O. BOX 509 / U.S. 31 & M-43 / SOUTH HAVEN, MICHIGAN 49090 / (616) 637-1171

May 3, 1977

RECEIVED

MAY 9 1977

BECHTEL POWER CORP.  
JOB 7220  
PER 15451 0211

Mr. John Church  
Subcontracts Department  
Bechtel Power Corporation  
P.O. Box 2167  
Midland, Michigan 48640

Subject: Consumers Power Company  
Midland Station Units 1 & 2  
Bechtel Power Corporation Subcontract #7220-C-210  
Plant Foundation Excavation and Cooling Pond Dikes  
Canonie Construction Co. Quality Assurance Program  
dated August 1976  
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Mr. John Church  
Page 2  
May 3, 1977

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*W. R. Moore*

W. R. Moore  
Quality Assurance Engineer,  
Canonic Construction Co.

*W.R. Moore for J.K. McKane*

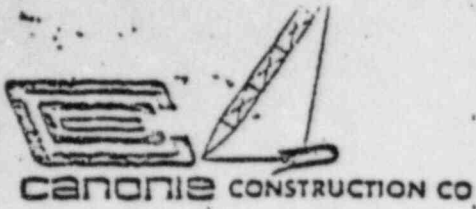
J. K. McKane  
Vice President,  
Earthmoving Division;  
Manager of Quality Assurance,  
Canonic Construction Co.

WRM/bw

Enclosures (1/1)

cc: J.K. McKane





WRW  
W. K. Madel J/S  
J. K. Madel J/S  
REVISION

Page 1 of 13

Date: 4/5/77  
Rev: 3

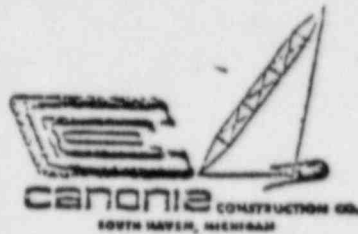
Addendum to: Canonie Construction Co.  
Quality Assurance Manual  
Dated, August, 1976

Contract: Bechtel Subcontract  
No. 7220-C-210

Location: Midland Station Units 1&2  
Midland, Michigan

Owner: Consumers Power Company

Title: Supplemental Requirements for the Canonie Construction C  
Quality Control Program for Q Listed Areas



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The Quality Control Engineer shall have the authority to stop the continuation of work that is deficient in characteristic, documentation, or procedure which renders the quality of an item unacceptable or indeterminant. This shall include, but not be limited to physical defects, test failures, incorrect or inadequate documentation, or deviation from prescribed processing, inspection or testing procedures.

Delete sentence 1, para. 4, section 3.1 as written, and insert:

Activities which may be routinely performed by Canonie Construction Co. as part of inspection services on a project, such as concrete testing, structural earthwork control or testing of reinforcement steel, shall be conducted to recognized standards or referenced specifications.

Delete sentence 4, para. 2, section 3.2.3 as written and insert:

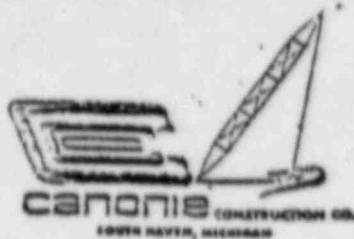
Revision receipts shall be signed and dated by the assignee, or designated representative, and returned to the Manager of Quality Assurance within 15 days of receipt.

Delete sentence 4, para. 3, section 3.2.3 as written and insert:

A new approval sheet, signed by the President, Canonie Construction Co. and the Manager of Quality Assurance, shall be issued to indicate the current revision number and date of the manual issue in effect. This shall indicate Canonie Construction Co. acceptance of the policies and procedures defined therein.

Delete sentence 2, para. 1, section 3.4.2 as written and insert:

A file of all Quality Assurance/Control records shall be maintained to comply with all owner/constructor contractually specified requirements. These records shall be maintained as required by



this manual and applicable code and regulatory requirements.

Delete sentence 2, para. 1, section 4.4 as written and insert:

For all the various activities included in the scope of work for the referenced specification,

Item II, Supplements:

1.0 Organization

The Canonie Construction Co. Quality Control Organizational interface with the Bechtel Power Corp. is shown in figure 1.

- 1.1 The Project Manager performs overall site supervision to ensure that construction schedules are maintained and that the work is performed in compliance with drawings and specifications. He coordinates work with the site Quality Control Engineer to assure compliance to the accepted quality program.
- 1.2 The QC Engineer has responsibilities and duties as follows:
  - 1.2.1 He will document the classification of the borrow by the Testing Laboratory to the Project Manager for use by the Field Foreman.
  - 1.2.2 Based on borrow selections he prepares daily reports verifying by station, by zone, the fill placement, the moisture control, and the compaction conformance necessary to meet specs.
  - 1.2.3 In this function, he is completely mobile and will be available for comment from the General Contractor's inspection force. He will be in communication with the Project Manager to correct any deviations in the fill requirements as established by the project specifications.
  - 1.2.4 The Quality Control Engineer has the authority to assure total compliance to the Quality Assurance/Quality Control program by all Canonie Construction Co. personnel.
- 1.3 The Field Superintendent shall initiate compliance with the borrow/cut programs as outlined by the QC Engineer through the Project Manager. He shall be responsible for reporting field production requirements to the Project Manager.
- 1.4 The Project Engineer shall work closely with the project manager and QC Engineer to establish survey and



control methods required to assure proper definition of zone fills and lift controls.

2.0 Quality Control Program

- 2.1 The Quality Control Team or member shall be responsible for quality control and documentation for all Q Listed areas as designated by contractor's and/or owner's specifications. The inspection unit shall assure that the project specifications are strictly enforced. Qualified and experienced personnel shall comprise the inspection force.
- 2.2 The Quality Control Engineer and/or his representative shall be responsible to the Canonic Construction Co. project QC manager and shall be independent of production, construction, scheduling and procurement.
- 2.3 The QC Engineer shall develop, in the course of his duties and as required, adequate forms, charts and logs to compile and assimilate required QC information and documentation of Q listed work.
- 2.4 All QC Records and Documentation shall be stored in a fire resistant filing cabinet. The records shall identify the inspector or data recorder, the activity monitored, date of inspection or test, test results, acceptability and any corrective action required or taken. This information shall be supplemented as required.
  - 2.4.1 The On Site Records shall be filed in an orderly fashion and shall be readily identifiable and retrievable. Upon completion of construction work, records shall be turned over to the owner's operations group or his designated representative.
- 2.5 The QC Engineer shall assure that the proper zoned materials are delivered to the proper location and the proper compaction control is performed as required by the specifications.
- 2.6 The QC Engineer shall schedule his work so that all operations, reports, documentation and related items shall be available to the contractor and/or owner and to facilitate the establishment of a functional interface between the appointed testing laboratory, general contractor and field superintendents.
- 2.7 The QC Representative shall become familiar with the testing laboratory personnel testing methods and individual soil classification characteristics.



Page 5 of 13

- 2.8. The QC Engineer's level of authority shall be equal to the highest ranking production unit ie: supervisor or superintendent. The QC Engineer does not direct work forces, except through supervisory personnel, and then only in quality related areas to insure compliance with job specifications, procedures, and drawings.

6.0 Document Control

6.1 Index Card File System

- 6.1.1 Individual Card for Each DWG shall be maintained listing:

DWG Title and Number

Revision Number

Revision Date

Date Received

Number Received

Classification: Preliminary  
or Approved

Distribution: Stick Number or Name of Person  
drawing is issued to

- 6.2 A Drawing Summary List shall be maintained listing:

Stick Number

Drawing Number

Title

Revision and Date

Status: Preliminary  
or Approved

6.3 Drawing Awareness

New or revised drawing will be routed to assure all personnel concerned are aware of change. A list of document assignees shall be maintained to assure proper distribution.

- 6.4 Separate storage of Superseded Drawings and Specifications to Maintain Adequate Control shall be provided. All superseded documents shall be voided.

- 6.5 Document control shall not be confused with documentation control. It is not intended that document control shall be specifically a function of the quality control Engineer. An authorized agent of the QC Department may



perform the document control function. Documentation shall be a function of the QC Engineer and shall show all pertinent information as required by contractor's specifications.

8.0 Identification and Control of Materials, Parts and Components

8.1 The QC Representative, working with the general contractor's representative, shall inform subcontractor's field supervision force of soil classifications in borrow areas as designated by the testing laboratory.

15.0 Non-Conforming Materials, Parts or Components

15.1 Compaction Equipment

15.1.1 The utilization of dissimilar compaction equipment outlined in exhibit D of 7220-C-210 shall be as follows:

15.1.2 The owner's testing laboratory shall be requested to perform tests on controlled test-fills within the embankment as required to determine pass requirements for each individual type compactor.

15.2 Backfill Materials

In the event that non-conforming materials are discovered in borrow areas by the testing laboratory, the contractor shall be notified for disposition. Non-conforming material shall be removed and/or disposed of as required by contractor.

16.0 Corrective Action

When corrective action is required the following outline of activities shall be followed:

16.1 Identification of source of non-conformance.

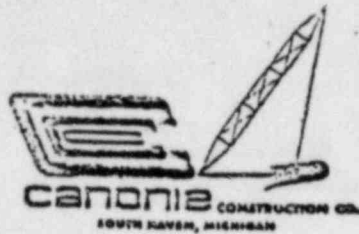
16.2 Evaluation of causes, conditions, present requirements and potential solutions.

16.3 Implementation of corrective action.

16.4 Contractor and/or testing laboratory analysis of problem is required if caused by external, uncontrollable sources, i.e. excessive precipitation causing moisture content of cohesive soils to exceed acceptance criteria and preclude conformance to compaction requirements.



- 16.5 When internal corrective action is required, it shall be documented for review and concurrence by the QA Manager. If the causes of non-conforming conditions are external and outside the specified jurisdiction of the subcontractor, recommended corrective action shall be requested of the contractor and/or his agent, and shall be concurred with by Canonie site quality control.
- 16.6 Documentation as required by owner shall be maintained in accordance with document control procedures.
- 17.0 Quality Control Records shall be compiled and submitted to Bechtel for their review and retention. Copies shall be maintained by Canonie Construction Co. and shall include related data such as qualifications of personnel, procedures, and equipment. Consistent with applicable regulatory requirements, the owner/contractor shall establish requirements concerning record retention and turn-over, such as record detail and type, and systems effected. Canonie Construction Co. Quality Assurance shall be notified in writing of any and all changes in documentation requirements.
- 17.1 The following forms shall be used to document the implementation of quality program on site.
- 17.1.1 Lift Thickness Control - Figure 2  
By determining elevation before and after placement operations from grade stakes, the QC Engineer shall determine the lift thickness achieved. He will prepare a report from information listing the following data:
- Observation  
Zone  
Work Location  
Size of Area  
Elevation(s): Before  
                  After  
Lift Thickness  
Date
- These random lift thickness checks shall be performed on an average of two areas daily depending on the working area conditions and the materials classification.
- 17.1.2 Compaction - Figure 3  
On a daily basis the QC Engineer shall prepare



a report for each zone and work area listing the following information: date, shift, weather, features, foreman, station, offset, elevation obtained, results of roller speed checks, equipment numbers, type, and frequency checks including vibration rate checks and time taken, and load counts.

17.1.3 Borrow Acceptance - Figure 4

The QC Engineer will obtain classification of material from the Bechtel representative and/or the testing laboratory.

17.1.4 Deficiency - Corrective Action - Figure 5

When notified by the Bechtel representative that a deficiency exists the QC Engineer shall note the date, time, feature, location, shift, foreman, elevation, and type of deficiency, i.e. failing test. He shall notify the project manager or his representative and corrective actions shall be implemented. After corrective action implementation, a new test shall be performed and the results noted. Where necessary, further corrective action shall be instituted.

17.2 Quality Assurance/Control Records

All the aforementioned reports shall be compiled and submitted to Bechtel for their review and retention. Copies shall be maintained on file by Canonie Construction Co.

18.0 Audits

A system of planned, periodic, and documented internal audits has been established to verify compliance with all aspects of the accepted quality assurance program.

18.1 Audits shall be performed in accordance with written check lists by personnel qualified and trained in the performance of audits and familiar with the scope of work being performed.

18.2 Audit personnel shall be selected to preclude the possibility of personnel participating in audit activities in areas where they have direct responsibility.

18.3 Audit results are documented and reviewed by management personnel having responsibility for the areas being audited.

18.4 Corrective action is implemented to correct deficiencies revealed by audit activities, and to correct system inadequacies determined to be the cause for significant conditions adverse to quality.

18.5 Audit results and corrective actions are reviewed by upper management to determine the effectiveness of the audit program in correcting conditions adverse to quality and to verify the implementation of corrective action.





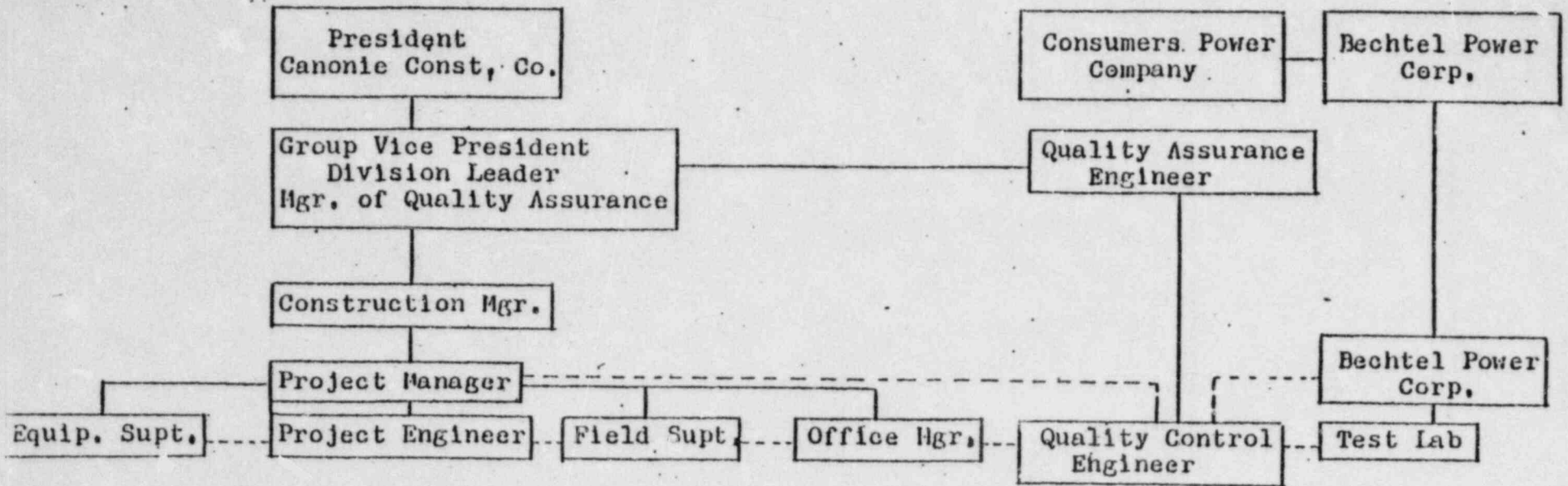
Page 8-A of 13

- 18.6 Where necessary to establish objective evidence of implementation, corrective action shall be verified by the performance of re-audits of those areas previously determined to be non-conforming.



Midland Station Units 1&2

Plant Foundation Excavation & Cooling Pond Dikes



———— Direct Responsibility

----- Communication



Figure 2  
Rev. 1, 7/26/73

Page 10 of 13-

MIDLAND NUCLEAR UNITS 1&2  
CANONIE CONSTRUCTION CO.

P.M. \_\_\_\_\_  
G.S. \_\_\_\_\_  
F.S. \_\_\_\_\_

LIFT THICKNESS CHECK

OBSERVATION NUMBER: \_\_\_\_\_

DATE: \_\_\_\_\_

ZONE: \_\_\_\_\_

LENGTH: \_\_\_\_\_

STATION: \_\_\_\_\_ TO STATION: \_\_\_\_\_

WIDTH: \_\_\_\_\_

OFFSET: \_\_\_\_\_

ELEVATION:	BEFORE	_____	AFTER	_____	LIFT THICKNESS	_____
	BEFORE	_____	AFTER	_____	LIFT THICKNESS	_____
	BEFORE	_____	AFTER	_____	LIFT THICKNESS	_____
	BEFORE	_____	AFTER	_____	LIFT THICKNESS	_____

AVERAGE LIFT THICKNESS \_\_\_\_\_

REMARKS/SKETCH:

BY: \_\_\_\_\_  
CANONIE CONSTRUCTION CO.  
QC REPRESENTATIVE



Figure 3  
Rev. 1, 7/26/73

Page 11 of 13

MIDLAND NUCLEAR UNITS 1&2  
CANONIC CONSTRUCTION CO.

P.M. \_\_\_\_\_  
G.S. \_\_\_\_\_  
F.S. \_\_\_\_\_

FILL PLACEMENT QA-QC DAILY REPORT

FEATURE:

- EMERGENCY COOLING POND BERM
- PLANT AREA FILLS
- R/R EMBANKMENT
- LAYDOWN AREA
- COOLING POND DIKE

DATE: \_\_\_\_\_  
SHIFT: \_\_\_\_\_  
WEATHER: \_\_\_\_\_  
FOREMAN: \_\_\_\_\_  
ELEVATION: \_\_\_\_\_  
STATION: \_\_\_\_\_ TO STA: \_\_\_\_\_  
OFFSET: \_\_\_\_\_  
MOISTURE TESTS: \_\_\_\_\_

ZONE:

- 1             4
- 1-A         4-A
- 2             5
- 3             6

LOAD COUNT \_\_\_\_\_

COMPACTION EQUIPMENT:

EQUIP. NO.	TYPE	FREQUENCY	TIME	SPEED
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

REMARKS/SKETCH:

BY: \_\_\_\_\_  
CANONIC CONSTRUCTION CO



Figure 4  
Rev. 2, 4/12/74

Page 12 of 13

MIDLAND NUCLEAR UNITS 1&2  
CANONIE CONSTRUCTION CO.

BORROW PIT ACCEPTANCE

P.M. \_\_\_\_\_  
G.S. \_\_\_\_\_  
F.S. \_\_\_\_\_  
\_\_\_\_\_

AREA:

- COOLING POND  
 DIKE FOUNDATION

DATE: \_\_\_\_\_  
GRID LOCATION: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

MATERIAL:

- IMPERVIOUS ZONE 1  
 IMPERVIOUS ZONE 1-A  
 RANDOM

APPROXIMATE ELEV: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

SKETCH:

The above area has been found to contain a suitable amount of material conforming to the requirements of the specification and, therefore, has been classified a borrow area.

It is understood that the borrow pit shall remain so designated until there occurs a marked change in the characteristic of the excavated materials.

REMARKS: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

BY: \_\_\_\_\_  
BECHTEL POWER CORP.

BY: \_\_\_\_\_  
CANONIE CONSTRUCTION CO.

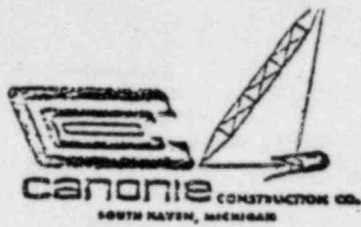


Figure 5  
Rev. 1, 7/26/73

Page 13 of 13

MIDLAND NUCLEAR UNITS 1&2  
CANONIE CONSTRUCTION CO.

P.M. \_\_\_\_\_  
G.S. \_\_\_\_\_  
F.S. \_\_\_\_\_

DEFICIENCY CORRECTIVE ACTION REPORT

DATE: \_\_\_\_\_ TIME: \_\_\_\_\_ SHIFT: \_\_\_\_\_

FEATURE: \_\_\_\_\_ FOREMAN: \_\_\_\_\_

LOCATION: \_\_\_\_\_ ELEVATION: \_\_\_\_\_

DEFICIENCY: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

CORRECTIVE ACTION: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

SUGGESTED PREVENTATIVE MEASURES: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

CORRECTIVE ACTION QUALITY ASSURANCE:

TESTING: \_\_\_\_\_  
\_\_\_\_\_

OTHER: \_\_\_\_\_  
\_\_\_\_\_

SKETCH (IF REQ'D):

BY: \_\_\_\_\_  
BECHTEL POWER CORP.

BY: \_\_\_\_\_  
CANONIE CONSTRUCTION CO.

DATE: