Documents Requested by

NRC Staff From Package

Presented by Don Horn,

Field QA Engineer, but not

Used as Deposition

Exhibits 10/21,22/80

-	-
	_
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a	CHILL
1	THE PARTY

## MEMORANDUM

Hom

## "DON'T SAY IT - WRITE IT"

To	DM	Location
From	Gony	Date
Subjects	I've filled out the	checklist for all
	the items I could find	in the manual

3044 (8-69)

V

Organization

Quality Assurance Program

Instructions & Procedures

Inspection Quality Assurance Records

Non · Conformance Corrective Action Andits



Midland Project: P.O. Sox 1963, Midland, Michigan 48640 - Ares 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 | 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



# Telephone call

		ROUTE RICHARDSON GE
BY JON HOOK	or SITE Q.A.	Rous
TO JERRY HEBRINE	. AA Q'E	CHERCH
DATE HARCH 4 1.7	Z TIME 9:30	STORNETTA
SUBJECT CARONIE O.A HAND	46	727A
I ASKED SERRY WHAT E SCN TO CONONIE'S Q.A. 4 MORE CRITERIA TO THE MANUAL	FUER HAPPENED HANUAL THAT	WOULD ADD
JERRY STATED THAT THE (TOH COOKE) FOR CONCURR CUR WITH THE SCN AT IN T.C COOKE'S MEMO TO R. CASTLEBERRY	THIS THE	DID NOT CON -
JERRY STATED THAT T AWAITTING A NEW BER	HE SON 15	NOW IN "HOLD"

Joseffah

CONSUMERS POWER COM. PANY

DEGE | W E | D

FEB9 1977

## Telephone call

FIELD QUALITY ASSURANCE



BY JON HOOK ONIOLAND QA BOOK

TO SCRRY MCBRIDE OF AA QE FILE COUNTY

STORME FERRUARY 7 177 TIME 2:45

SHOWNER TO THE TOTAL TIME TO THE TOTAL TOTAL TOTAL TOTAL TOTAL TOTAL TOTAL TOTAL TOTAL TIME TO THE TOTAL TOT

JERRY STATED THAT THE PROPOSED SCN TO SPEC.

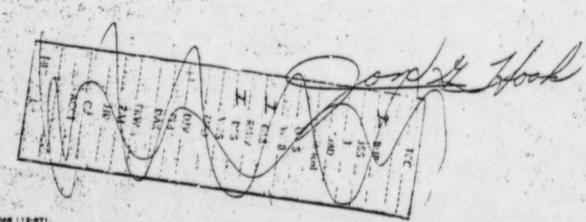
7220 C-210 REV. 4 ON SECTION 16.0 HAS BEEN APPROVED BY BECATER PROJECT ENGINEER THIS SCN WILL BE ISSUED AFTER APPROVAL IS GIVEN BY CONSUMER'S POWER.

UIA THE SCN.

THEY ARE :

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





### ATTACHMENT A.

Areas not addressed in Canonie's OA 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 incompliance with current job requirements.

- 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 inaccordance with ANSI N45.2.7-7.
- 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" Sechtel is in charge of the testing program. Canonie's QA Manual should reflect this information.
  - Section 4.6 "Calibration of measuring equipment"

    Bechtel is in charge of this area and Canonie's QA Manual should reflect this information.
    - 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 preceeding sentence should be added before the last paragraph on page 4-9.

Popular outering 477

to dect

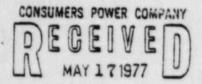
- This is not in Canonie scope of work. Bechtel does this, and the QA Manual should reflect this information.
  - 7) Section 5.0 "Examples . . . procedures" Appendix 0 - is not applicable and should be taken out.
  - 8) Appendix C ". . . structural fill (soils) The following list are sections in Appendix 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 OC.



FIELD QUALITY ASSURANCE

**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. Corle :

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	1
	REW	
	DRK	
1	DEH	
	WHS	
	RGW	
Total I	37	
	513 -	
II.	C Alley	
	Return	

CONSTRUCTION CO. / P.O. BOX 509 / U.S. 31 & M-43 / SOUTH HAVEN, MICHIGAN 49090 / 16161 637-1171

May 3, 1977

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

BECHTEL POWER CORP. 108 7220 134EL

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 44-7, Ser # C-210-B-190, dated 4/21/77 Letter dated 6/29/76, J. F. Newgen to Canc . 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

Quality Assurance Engineer, Canonie Construction Co.

MI A VANCON

Vice President, Earthmoving Division:

Manager of Quality Assurance, Canonie Construction Co.

WRM/bw

Enclosures (1/1)

cc: J.K. McKane



WRING TATE

REVISION

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



Page 2 .of 13

### 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



### Page 3 of 13

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 Eased 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.
    - I.2.3 In this function, he is completely mobile and will by 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



Page 4 of 13

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 CC 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

- 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 contractors specifications.

- 8.0 Identification and Control of Materials, Parts and Components
  - 8.1 The OC 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 testfills within the embankment as required to determine pass requirements for each individual type compactor.
  - 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.
- 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, ie. excessive precipitation causing moisture content of cohesive soils to exceed acceptance criteria and preclude conformance to compaction requirements.



Page 7 of 13.

- 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 subcontrac or, 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.
- 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



#### Page 8 of 13 .

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.
- 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.



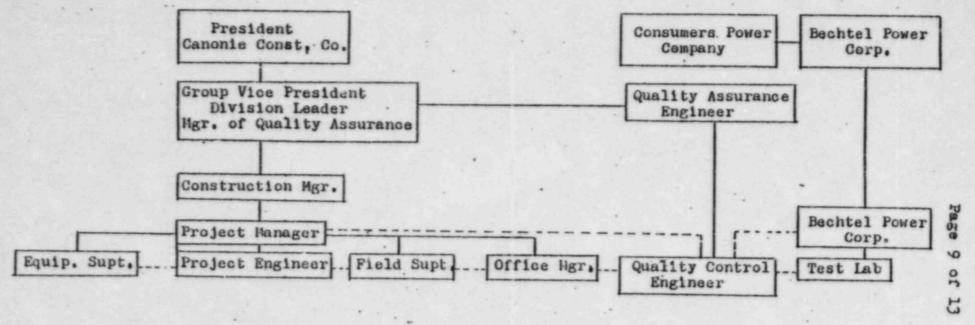
## Page 8-A of 13

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

Rev. 3, dated 4/5/77



Figure 2 Rev. 1, 7/26/73

> P.M. G.S. F.S.

Page 10 of 13-

## MIDIAND NUCLEAR UNITS 142 CANONIE CONSTRUCTION CO.

### LIFT THICKNESS CHECK

OBSERVATION			_		DATE:
	TO STATION				*FTGIW
ELEVATION:	BEFORE	AFTER_		LIFT	THICKNESS
	BEFORE	AFTER_		LIFT	THICKNESS
	BEFORE	AFTER_		LIFT	THICKNESS
	BEFORE	AFTER		LIFT	YEICKNESS
			AVERAGE	LIFT	THICKNESS

REMARKS/SKETCH:

BY:		
	CANONIE CONSTRUCTION QC REPRESENTATIVE	CO.



Figure 3 Rev. 1, 7/26/73

## Page 11 of 13

FILL POPULATION FILL POPULATION FEATURE:  ( ) EMERGENCY COOLING PON ( ) PLANT AREA FILLS ( ) R/R EMBANKMENT ( ) LAYDOWN AREA ( ) COOLING POND DIKE	LACEMENT OA-QC DA	DATE: SHIFT: WEATHER: FOREMAN: ELEVATION: STATION:	TO STA:
ZONE: ( ) 1 ( ) 4 ( ) 1-A ( ) 4-A ( ) 2 ( ) 5 ( ) 3 ( ) 6		OFFSET: MOISTURE TEST	
COMPACTION EQUIPMENT: EQUIP. NO. TYPE	FREQUENCY	TIME	SPEED



Figure 4
Rev. 2, 4/12/74

Page 12 of 13

MIDLAND NUCLEAR UNITS 1&2 CANONIE CONSTRUCTION CO.

BORROW PIT ACCEPTANCE

APPA.

P	H	
G	3	
P	S	
7		

( ) COOLING POND ( ) DIKE FOUNDATION	DATE:
MATERIAL: ( ) IMPERVIOUS ZONE 1 ( ) IMPERVIOUS ZONE 1-A ( ) RANDOM	APPROXIMATE ELEV:
SKETCH:	
The above area has been for material conforming to the requirement therefore, has been classified	und to contain a suitable amount of irements of the specification and, a borrow area.
It is understood that the until there occurs a marked cha materials.	borrow pit shall remain so designated nge in the characteristic of the excavated
REMARKS:	
BY: BECHTEL POWER CORP.	BY:



Figure 5 Rev. 1, 7/26/73

## Page 13 of 13

## MIDLAND NUCLEAR UNITS 142 CANONIE CONSTRUCTION CO.

P	M	* -		_		
GF	S					
F	3		1		Ξ	_

	DEFICIENCY CORRECT	TIVE ACTION REPORT	F.S
DATE:		PIME:	SHIFT:
			FOREMAN:
	<b>自己在一种的一种,例如</b>		ELEVATION:
CORRECTIVE	ACTION:		
SUGGESTED I	PREVENTATIVE MEASURES:		
CORRECTIVE	ACTION QUALITY ASSURANCE		
	TESTING:		
	OMETER .		
	OTHER:		
SKETCH (IF	REQ'D):		

DATE:\_

1. ==

### The Quality Assurance Program

They should only be working with the Quality Control Program.

### Section 2.5 "Project Communication"

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 XXXXXX Section 2.2 Manager of Quality Assurance which states in part, "As such, the Quality Assurance staff will be directly responsible to this individual for the reporting of all quality-related problems". Section 3.1 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 & Quality Assurance Manual or, as previously mentioned, manuals of practice for specific work items". This "or" should be and."

### Section 1.0 I "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 XXXXXXXX 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 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 an approval as concrete testing, scructural earthworks.

### 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 KKKAK Copies"

MAX 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 IIIX 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 withdrawxx copies if necessary". This statement has XX to be more specific.

### Section 3.2.3 "Revision of Documents"

mand MXXXX 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 INXINIX included in this review?

### Section 3.2.3 "Revision of Documents"

IXIXA paragraph on page 3-4 states in part, "The revision shall be signed and dated I by the copy holder and promptly returned to the Manager of Quality Assurance". This should read, IXXXIX "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 ssued which INSINXER 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"

Section 3.3 goes on to state, "Cooperation with KRMKITKHKK 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 J.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 & Quality Assurance personnel or external organization. However, Quality Control standards % shall be subject to review and approval by the AM manager of Quality Assurance or AMATHAN designated Quality Assurance personnel prior to implementation". Quality Control standards that are prepared by Quality Assurance personnel should not be approved by Quality Assurance in personnel. Also EM 3.3.1 "Quality Assurance Internal Audits" states in part, "The Manager of Quality Assurance shall appoint a Quality Assurance Engineer". If the Quality Control standard is approved by an external organization, & review and approval should not be by the Quality Assurance Awho, in fact, is the external organization.

### Section 3.3.1 'Quality Assurance Internal Audity'

What is the difference between these programs?

"Further, additional audits may be required if

WE 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 or compliance with the GHXITYXXXXXX Quality Assurance

Program". This section states Quality Control Program and Quality Assurance Program.

What is the difference between these programs?

### Section 3X3 3.4.1 "Audit Reports and Corrective Action"

States in part, "Issuance of the audit report# as described in the following \*\*\*\*

and

paragraph shall be in a timely manner ### unless prevented by scheduling difficulties

should be within ten days ### of the completion of the audit!". What \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

scheduling difficulties are foreseen?

## Section 3.3.1 "Quality Assurance Internal XHXXXX Audits"

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

First paragraph on page 3-9 states in part, "A Project Quality Assurance record".

Record is spelled record. 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 MANAIN copies submitted to Bechtel?

Page 3-10, second paragraph scates 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" M

States in part, "The Project Quality Assurance YANXX 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 training of personnel and YANXX review of procurement & documents have WAN 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?

Section 3.6 "Training of Personnel ANAXWANTY 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.

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

DEC2 1 1976

FIELD QUALITY ASSURANCE

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,

. J. F. Newgen

JFN/JV/skd

Attachment

La constitution tother

REW ORK DEH WHS RGW

3,11 Milest about QC Standards which might be prepare by QC Pg. 3-5 2ND to rest fra. QA records 3.2.3 fact pont, fort pera. QA raco do 3-9 157 pera. Andt pegot project QA record 3-12 Lutena, - Poss. QA record 3-13 & ND to sont para. Proj. QA record 3-15 2ND to lost Pour report - O'Ances of 3-16 last para. QA row do 4-5 second to last para, of see. 4.5 strecords 4-9 QCdoc. 4-10 2C Loc. (15T para.

> 4.75/ 2.50 Full



SEIJ.

SUPPLIER QUALITY ASSURANCE SYSTEM EVALUATION CHECK SHEETS



REV. 0 2/15/74

SUPPLIER		SURVEY	DATA:
NAME: Canonie Co	nst. Co,	DATES:	inglehi a mani, a
ACILITY ADDRESS:		SURVEY BY:	
TY & STATE:		STATED SYSTEM LEVEL:	
IP CODE:		EVALUATED SYSTEM LEVEL:	
HONE NO:	esignes sintent	. QA SYSTEM MEETS REQTS:	
PRINCIPAL PRODUCT OR SERVICE:			
NUCLEAR % N	CAL % MEC	HANICAL % 1&C %	
TOTAL NO OF PERSONNEL AT FAC			
ENIOR COMPANY OFFICIAL:			
SENIOR DA DEPT OFFICIAL:		CONTRACTOR HUMBERS	
THER KEY COMPANY PERSONNEL			
		THE REPORT OF THE PARTY.	
URVEY TEAM INFORMATI	ON:		
	NAME	TITLE	DISCIPLINE
TEAM LEADER:			
TEAM CEADEN:			
TEAM MEMBER:			

SHEET 1 OF 26



SECT		LEVEL & ADEQUACY				
0	SYSTEM ELEMENT	8	N	COMMENTS		
A	General .		-		-	
0	Organization		1			
2)	Quality Assurance Program		1		_	
3	Design Control					
	Procurement Document Control				_	
S)	Instructions, Procedures and Orawings				-	
_	Document Control				-	
,	Control of Purchased Material, Equipment and Services				-	
	Identification and Control of Materials, Parts and Components				-	
	Control of Special Processes					
2	Inspection					
1	Test Control					
2	Calibration of Measurement and Test Equipment				_	
3	Handling, Storage, Shipping and Preservation					
	Inspection, Test and Operating Status					
-	Nonconforming Material, Parts or Components	-	-		_	
	Corrective Action		-		_	
	Quality Assurance Records		-			
1	Audits		+		_	
	Otter		+		_	
			+		_	
			+		_	
ARY	COMMENTS OF EVALUATOR:					
			_			
			-			
KE	Y TO SPECIFICATION LEVEL:					
	8 - AEC 10 CFR 50 (B)					
	N - ANSI N45.2		EV	ALUATOR'S SIGNATURE AND DATE	-	

SHEET 2 OF 26



 - GENEHAL	marin.			
		11.	0.45	

1.	What is the basis for the Supplier's QA Prog	mmi JOCFR	50 A	ypendtx	B	where in	
_	applies to scope of	work A	NSI /	ATM &	ACT		-
2.	Is program basis a written Company policy?	QA Manual	is ac	cested.	uj a	C. Jugeni	MOTEV

	Documents (Manuals)			Status*	
a. Umbrella*	Great ty Assurance Manual	Rev	Date	4	5
b. Design	great ty Assurance Manual		8/16/76		V
c. Procurement		_	1		
d. Fabrication					
a. Construction					
f. Inspection					
2. Testing					
1. Auditing					

mandas in user (if yes, list.)	

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

<sup>\*3</sup>a. The overall governing and policy setting QA Manual and Program.

<sup>\*4.</sup> Are CA Program documents up to date?

<sup>\*5.</sup> Are QA Program documents approved by responsible personnel?



SECTION 1.0 ORGANIZATION

u	QA PROGRAM	STATEMENT		L	EVEL & ADEQUACY	
	EVALUATION CRITERIA	LOCATION	8	N		COMMENTS
.1		\$2-3 400. 2.2	1	V	3 KD para. 1-	1 41-2 .
2		p2+ sec. 2.3	-	1	2-3	
-3					1 for 44 pro	nitionally response
4	Authority and duties of persons and organizations performing QA functions clearly established and delineated in writing.  (1-3/3-1, 2, 3)	P. 2.3 ±	1	/	2-3 2:4	part of live curinsuit
5	Authority and organizational freedom of such persons and organizations sufficient:	13.4.				
- 1	a. To identify problems;	134. 7	V	"g"		
1	b. To initiate, recommend, or provide solutions;	P3 4001.4.1				
	c. To verify implementation of solutions (1-4/3-4); and	13 300 3 T.	,	,		
	d. To control further processing, delivery, or installation of a moneonforming item, deficiency or unsatisfactory condition until proper disposition has occurred. ( - /3-4)	P2-4 2.3		/		
40.0	Management measures provide that the individual or group respon- sible for checking, auditing, inspection or otherwise verifying that an activity has been cor- meetively performed is independent of the individual or group lirectly responsible for performing the specific activity. (1-5/3-7)	p 2. 4. 4 guz. 2.4	1	/	with exception is supervision of Dan quality requirement on at.	4601 1. 1. 1. 1.
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М	CA PROGRAM EVALUATION CRITERIA	STATEMENT	LEVEL & ADEQUACY	
-7	ORGANIZATION (Contd)  The person or organization responsible for defining the overall effectiveness of the QA program:  a. Shall be designated;	12.4 5u2.3	B   N	COMMENTS
	b. Shall be independent from the 27 pressures of production; 7, 2.1  c. Shall have direct access to responsible management at a level where appropriate action can be required; and  d. Shall report regularly on the effectiveness of the program.	P2.4 P2.4 Su.2.3 P3.5 Su.3.3.1	With exerger in or for bouterill in wenu	Source in seguire have - :
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SECTION : 2.0 QUALITY ASSURANCE PROGRAM

Supplier shall establish a 04 pl. 1 feb. 2017.  2 Documentation of Ca program shall be by:  a. Pritten polician;  b. Procedures; or  c. Instructions. (2-2/-)  2. The for this program shall be the contract of the life life life life life life life lif	M .	QA PROGRAM	STATEMENT .			LEVEL & ADEQUACY		
Dopplier shall establish a da state of the program shall be state of the control of the program shall be by:  a. Prictae policians;  b. Procedures; or  a. Instructions. (2-2/-)  J. Plans for this program shall be control of the program shall be control of the state		EVALUATION CRITERIA		418	T	4	COMMENTS	
Documentation of A program shall be by:  a. Pritten policies;  b. Procedures; or  c. Instructions. (2-2/-)  Plans for this program shall be carried out for the life of they be control out for the life of they be control out of corts life of they be control out of corts life of they be control out of corts life of they be control out of control out out of control out of control out of control out of control out out out of control out out out of control out	2.0	QUALITY ASSURANCE PROGRAM	サントラコ・レングト		T			
Documentation of OA program shall be by:  a. Fritten policies;  b. Proceedures; or  c. Instructions. (2-2/-)  Plans for this program shall be control over the life of lif	7	Supplier shall establish a QA plant of program that complies with (ABC/Nb5.2). (2-1/2-1)	Sew 3.1)	. 0	1			
b. Proceedures or  c. Instructions. (2-2/-)  2. Instructions. (2-2/-)  3. Alamator this progress shall be sarried out for the life of the	2	Doomsentation of CA program shall be by:	1-1 5001.0	1	T	10 14 4 4	- Vanual	
C. Instructions (2-2/-)  Plans for this program shall be carried out for the life of the life life life of the life life of the life life of the life life life of the life life life life life of the life life life life life of the life life life life life life life lif			1	11	1	Tylanus = P	tick	
Plane for this program shall be carried out for the life of the li				+	+	1)		
Identify items or service to be covered by the QA program.  (2-1/2-2) the QA program and their participating in program and their insignated contitions.  (2-1/2-1) the participating in program and their insignated contitions (2-1/2-1) the participating in program activities affecting quality of the identified items quality of the identified items quality with their imperance to selfety, reliability and performance.  (2-1/2-6, 7, 8)  Description affecting quality shall be accomplished under suitable contributed conditions.  Controlled conditions include:  a. Use of appropriate equipment;  b. Daitable environmental conditions of the given activity is a dequate cleanalines; and  c. Assurance that prerequisites for the given activity have been activity, is a dequate cleanalines; and  7 Program shall take into secount the lead for special:  a. Controlls  b. Processes;  c. Test Equipment;  d. Tools; and	.	** And Grantians. (2-2/ - )	4	×	1	1		
covered by the A program.  (2-3/2-5)  Hentify major organizations participating in program and their instignated functions.  (2-3/2-4)  G A program provides control over activities affecting the quality of the identified items or services to the extent constanant vith their importance to safety, reliability and performance.  (2-4/2-6, 7, 3)  Activities affecting quality shall be accomplished under suit- shall be accomplished under suit- shall controlled conditions.  Controlled conditions include:  a. Use of appropriate equipment;  b. Duitable environments condi- tions for accomplishing the activity, is, sequate clean- lines; and  c. Assurance that provoquisites for the given activity have been satisfied. (2-5, 6/2-11, 12)  5 Trogram shall take into account the med for specials  a. Constrolls  Controlled conditions  Controlled conditions  C. Assurance that provoquisites for the given activity have been satisfied. (2-5, 6/2-11, 12)  5 Trogram shall take into account the med for specials  a. Constrolls  C. Treet Equipment;  d. Tools; and	.,		4-10/20011	V	1			
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d. Tools; and	1	. Processes;	THE RESERVE AND PERSONS ASSESSMENT A					
d. Tools; and								
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	DA PROGRAM	STATEMENT .		LEV	EL & ADEQUACY	The American Control of	
	EVALUATION CRITERIA	LOCATION	3	N		COMMENTS	
Pro	Crem shall take into secount need for verification of lity by inspection and test. 7/2-13)	P 4.3 500 4.4	1	,			
pers qual	gram shall provide for indoctri- ion and training of personnel forming activities affecting kity as measury to assure table proficiency is achieved and stained. (2-8/2-10)	3003.0	7	1	No months of their of 44. Second	maintaining profiquences of succession of the su	
STAT	plier shall regularly review the mus and edequacy of his entire wogram. (2-9/2-14)	P3.15 3.7	1	1			
part revi	ing in the QA program shall ev status and edequacy of that of QA program which they are uting. (2-10/2-14)	823.7	~	1			



SECTION	3.0	DESIGN	CONTROL		
	الراحة ال	. /	I/A		

	QA PROGRAM	STATEMENT		LE	VEL & ADEQUAC	Y	
	EVALUATION CRITERIA	LOCATION	8	N			COMMENTS
.0	DESIGN CONTROL		T				
1	Measures shall be established to assure that applicable specified design requirements, such as design bases, regulatory requirements, codes and stundards are cowrectly translated into spees, drawings, procedures and instructions.  (3-1/b-1)						
2	Measures shall include provisions to assure that appropriate quality standards are specified and included in design documents.  (3-2/5-2)						
.3	changes or deviations from design requirements or quality standards shall be identified, documented and controlled. (3-2/b-3)						
۸.	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	Peasures shall be established for the identification and control of design interfaces and for coordination among participating design organizations. (3-b/b-7)						
.5	Measures shall include the estab- lishment of procedures among participating design organizations for review, approval, release, distribution and revision of documents involving design interfaces. (3-5/4-8)						
	Design control nessures shall provide for verifying or checking adequacy of design such as performance of design review, by the use of elements or simplified calculational methods, or by performance of a suitable testing program. (3-6/h-9)						
1	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)				_		
-	20年3年7月2日日本共和国				Hart Early		
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 N/X		

DESIGN CONTRUL (Contd)  The responsible design organization shall identify the particular varification suthods utilized.  (-/h.l)  Where a test progree is used to varify the sisquery of specific design feature in liter of other varifying or checking process, it shall include suitable qualification testing of a protupy unit under the nest odverse design conditions.  [jaj/har, 15]  Design control measures shall be applied to them such as the following:  a. Prescutor physics analyses;  b. Stress, thermal, hydraulic and secident analyses;  c. Compatibility of materials;  d. Accessibility for in-service inspection;  e. Accessibility for in-service assistenance and repair; and  for inspections and state.  (1-9/h-1)  Design changes, including field changes, shall be subject to the design control measures commanders of the original design and be approved by the design control measures commanders of the original design and be approved by the design control measures commanders of the original design and be approved by the design control measures contents.		GA PROGRAM	STATEMENT '	1	LE	VEL & ADEQUACY	
The responsible design organization shall identify the particular varification sethods utilized.  (-/-12)  Where a test progree is used to varify the adequate of sweeting design feature in lieu of other verifying or checking process, it shall include suitable qualification testing of a prototype unit under the next odverse design conditions.  (3-6/k-17, 18)  Design control measures shall be applied to items such as the following:  a. Prestur physics analyses;  b. Stress, thermal, hydraulic and accident analyses;  c. Compatibility of materials;  d. Accessibility for in-service maintenance and repair; and  for inspection;  e. Accessibility for in-service maintenance and repair; and  for inspection and tests.  (1-9/k-5)  Design changes, including field changes, shall be subject to the design control measures occumentaries with home copyleted to the original those copylete to the design control measures occumentaries with home copyleted to the original changes, shall be subject to the design control measures occumentaries with home copyleted to the original changes, shall be subject to the design control measures occumentaries with those copyleted to the original changes and he approved by the organization that performed the original stockers in these tempers and the performed the original stockers in these tempers accorder.	•	EVALUATION CRITERIA	LOCATION	3	N		COMMENTS
warfination methods withined.  ( - /A-12)  Where a test progres is used to wriffy the sisquary of specific design fracture in lieu of other wriffy the sisquary of specific design fracture in lieu of other wriffying or checking process, it shall include suitable qualification testing of a prototype unit under the new edware design conditions.  ( ]-0/A-17, 15)  Design control measures shall be applied to items such as the following:  a. Reactor physics analyses;  b. Sitress, thermal, hydraulic and accident analyses;  c. Compatibility of materials;  d. Accessibility for in-service maintenance and repair; and.  f. Delineation of acceptance criteria for inspection;  ( ]-0/4-5)  Design changes, including finite changes, shall be subject to the design control measures communicate with those applied to the original design and test performed the original design makes the purchaser design control measures conterned the original design makes the purchaser design contern makes the purchaser design and less approved by the organization that performed the original design makes the purchaser design and less another responsible corrections and the purchaser design and heart makes the purchaser design accounter.	.0	DESIGN CONTROL (Contd)					
verify the sisquacy of specific design feature in lieu of other verifying or checking process, it shall include suttable qualification testing of a prototype unit under the most edverse design conditions.  (3-0/4-17, 15)  11 Design control measures shall be applied to items such as the following:  a. Pesotor physics analyses;  b. Stress, thermal, hydraulic and accident analyses;  c. Compatibility of materials;  d. Accessibility for in-service inagonates and repair; and  f. Delimention of acceptance criteria for inspections; and tests.  (3-9/4-5)  Design changes, including field changes, shall be subject to the design control measures roomensure with those applied to the original design and as approved by the organization that performed the original design and supproved by the organization that performed the original design unless the purchaser designates another	.9	verification methods utilized.					
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b. Stress, thermal, hydraulic and sectident analyzes;  c. Compatibility of materials;  d. Accessibility for in-service inspection;  e. Accessibility for in-service maintenance and repair; and  f. Delineation of acceptance criteria for inspections and tests.  (3-9/4-5)  Design changes, including field changes, shall be subject to the design control measures comensurate with those applied to the original design and be approved by the organization that performed the original design unless the purchaser designates mother responsible organization.	11	applied to items such as the follow-					
c. Compatibility of materials;  d. Accessibility for in-service inspection;  e. Accessibility for in-service maintenance and repair; and  f. Delineation of acceptance criteria for inspections and tents.  (J-9/4-5)  Design changes, including field changes, shall be subject to the design control measures rocess- surses with those applied to the original design and be approved by the organization that performed the original design and be approved the original design and be approved.	- 1						
d. Accessibility for in-service inspection;  e. Accessibility for in-service maintenance and repair; and.  f. Delineation of acceptance criteria for inspections and tests.  (J-9/k-5)  Design changes, including field changes, shall be subject to the design control massures occusen- surate with those applied to the original design and be approved by the organization that performed the original design unless the purchaser designates another responsible organization	1	b. Stress, thermal, hydraulic and accident analyzes;					
e. Accessibility for in-service maintenance and repair; and  f. Delineation of acceptance criteria for inspections and tests.  (3-9/4-5)  Design changes, including field changes, shall be subject to the design control measures occuren- surate with those applied to the original design and be approved by the organization that performed the original design unless the purchaser designates another responsible organization Testponsible organization  Testponsible organization	- 1						
Design changes, including field changes, shall be subject to the design control measures comen- surate with those applied to the original design and be approved by the organization that performed the original design unless the purchaser designates another responsible organization responsible organization responsible organization	1	d. Accessibility for in-service inspection;					
Design changes, including field changes, shall be subject to the design control measures communicate with those applied to the original design and be approved by the original design unless the purchaser designates another	1	e. Accessibility for in-service maintenance and repair; and					
design control measures occursesurate vith those applied to the original design and be approved by the original design unless the purchaser designates another responsible organization.	1	for inapactions and tente			1		
[(3-10/4-21, 22, 23)	000000	manges, shall be subject to the lesign control measures comme- surate with those applied to the  priginal design and be approved  by the organization that performed  he original design unless the  urchaser designance applies			-		
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SHEET 10 OF 26



	CA PROGRAM EVALUATION CRITERIA	STATEMENT	1	LEVEL & A	DEQUACY	The second
_		LOCATION	8	N		COMMENTS
0	PROGUNDENT DOCUMENT CONTROL					
	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 cervices, whether purchased by the seller or by its subcontractors. (1-1/5-1)	P3-1143-12				
	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.	13.13.5		1		
	b. Drawings, specifications, codes and industrial standards with applicable revision data, tost and inspection requirements, and special instructions and requirements, such as for designing, fabrication, cleaning, arecting, packaging, hamiling, ahipping, and, if applicable, extended storage in the field; and for test equipment.					
0	plant facilities and records for source inspection and sudit.	13.12	V	1-		
d	. Records to be prepared, maintained, submitted or made available for review.	P 3.12 9435	7			
•	. Instruction on record retention and disposition.					
*	Provisions for extending applicable requirements of procurement documents to lower tier subscottractors and suppliers including sellers and buyers access to facilities and records. ( - /5-4, 5, 6, 7, 8)	53.12 See35.				
topr	ellers procurement documents shall equire contractors or subcontractors or provide a quality securence ogram consistent with pertinent ovisions of the (AEC/T45.2) iteria. (4-2/5-3)	p3-7 3.2.	1			
San	etion 4.0 Ormany Comments		_			
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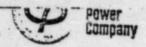


-	EVALUATION CRITERIA	STATEMENT		LE	VEL &	ADEQU	ACY			
+		LOCATION	8	N					COMA	MENTS
	Activities affecting quality shall be prescribed by documented instructions, procedures or drawings. 44.3.1 (5-1/6-1)	F2-482.4		1		Se	e M	an nal	, É	Pract
1	Activities shall be accomplished in 9)-1 accordance with these instructions, 3,1 procedures or drawings. (5-1/5-1)(u.	92-4 1.14 Sei: 23 \$ 1.4	1	~						
2 4 0 11	hall include appropriate quantita- ive or qualitative accoptance riteria for determining that apportant activities have been accomplished. (5-2/6-2)				Sp:	uni	onic ontin	should is fro	n 20	
S	oction 5.0 Summary Comments									
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----- PROCEDURES & DRAWINGS



М	GA PROGRAM	STATEMENT		CE	VEL & ADEQUACY	
	EVALUATION CRITERIA	LOCATION	8	N		COMMENTS
4	DOCUMENT CONTROL  Minaures shall be established to control the issuance of documents, such as instructions, procedures, and drawings, including changes thereto, which prescribe all activities affecting quality. (6-1/7-1)	13.2 42 3.21	~	V.	In Namual  attion in Can  and a section on	etters is a ments Project in comm
.2		1 3.2.3 5 w 3.2.3	1	1		
3	Changes to documents shall be reviewed and approved by the same organizations that performed the original review and approval unless the buyer authorizes another responsible ampanization.  (6-3/7-3, 5-2)	p 3-3-4-3-4			authorization in	required to
	The reviewing organizations shall have screen to pertinent background information. (-/7-4)			1		
	Document control measures shall provide for:  a. Identification of individuals or organizations responsible for preparing, reviewing, approving and issuing documents and revisions thereto. (-/7-7)	13-3 \$3-4		-		
L	b. Establishing current and updated distribution lists. (-/7-11)	P3.24 3:7		1		
	Sactica 6.0 Summary Comments					



ITEM	QA PROGRAM	STATEMENT			LEVEL & ADEQUACY	
	EVALUATION CRITERIA	LOCATION	-	_	A ADEQUACY	COLUMN
7.0	CONTROL OF PURCHASED MATERIAL,		-	+	1	COMMENTS
.1		1 24-9 Sept.m4.7	1 0		Services	t Tholade gursh
		13204.9	477	1		
	b. Objective evidence of quality furnished by the contractor or subcontractor.		+	-		
	e. Inspection at the contractor or 37	3" P+13+17	1	,		
1	delivery. (7-2/8-2)	Suction 4.7	1	1		
. 4	commentary evidence that material and equipment conform to the procure- ent requirements shall be svaliable to the suppliers facility prior to se of such material and equipment. 7-3/8-6)	14.9 500 477			of vaccing pur	in it inspection the charge mistells to
21 21 22 22 22 22	ocumentary evidence shall be stained by the supplier sur- icient to identify the speci- ici requirements such as codes, landards, or specifications, rt by the purchased naterial and uipment as required by procure- nt documents. (7-4/d-7)					
Ted Discontinues of the contract of the contra	quirements, such documentary tidence may take the form of attended to the form of attended to the form of attended to the pull tident to the pull tident to the validity of such tidications. (-/8-4)					
qua tra pur con-	coffectiveness of the control of Lity by contractors and subcon- ctors shall be assessed by the chaser or designee at intervals sistent with the importance, plexity, and quantity of the duct or services.			-		
Sect	ion 7.0 Summery Comments		_			
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MATERIALS, PARTS AND COMPONENTS

TEM	QA PROGRAM	STATEMENT .		LE	VEL & ADEQUACY	
	EVALUATION CRITERIA	LOCATION	8	N		COMMENTS
8.0	DENTIFICATION AND CONTROL OF MAINTAILS, PARIS AND COMPONENTS					
7	Measures shall be established for the identification and control of caterials, parts, and components, including partially "abricated assemblies. (8-1/9-1)					
2	Measures shall assure that identification of the item is maintained by heat number, part number, serial number or other appropriate means, either on the item or on records traceable to the item, as required throughout fabrication, erection, installation, and use of the item. (8-2/9-2, 3, 4, 5)					
-3	Identification and control measures shall be designed to prevent the use of incorrect or defective usterial, parts, and components.  (8-3/9-2)					
.3	where identification marking is employed, the marking shall be clear, unambiguous and indelible, and shall be applied in such a manner as not to affect the function of the item.  (-/9-6)			1		
	Markings shall be transferred to each part of an item when subdivided and shall not be obliterated or hidden by surface treatment or coatings unless other means of identification are substituted. (-/9-7)					
	When codes, standards, or specifi- cations require traceability of materials, parts, or components to specific inspection or test records, the progress shall be designed to provide such traceability. (-/9-b)			1		
	Section 8.0 Surmary Comments					
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E			-			
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SECTION . 9.0 CONTROL OF SPECIAL PROCESSES

V	QA PROGRAM	STATEMENT .		LS	IVEL & ADEQUACY	
	EVALUATION CRITERIA	LOCATION	8	N		COMMENTS
.0	CONTROL OF SPECIAL PROCESSES					
.7	Measures shall be established to assure that special processes, including welding, heat-treating, cleaning, and nondestructive testing are controlled and accomplished by qualified procedures in accordance with applicable codes, standards, specifications, criteria and other special requirements.  (9-1/10-1, 2)	1 4.10 5 4.1	>	1		
2	Documentation shall be maintained for currently qualified personnel, processes, or equipment in accordance with the requirements of pertinent codes and standards. (-/10-3)	14.14 44.14		1		
1	For special processes not covered by existing codes or standards, or where item quality requires at exceed the requirements of established codes or standards, the moressary qualifications of personnel, procedures, or equipment shall be defined. (-/10-4)					
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SECTION . 10.0 INSPECTION

EVALUATION CRITERIA  LOCATION B N  COMMENTS  10.0 Improve for inspection of activities affecting quality shall be established affecting quality shall be established and temporal for the expectation of the foreground provided by or for the expectation of the foreground interface of the foreground interface of the foreground interface of the foreground interface of the foreground of the foreground provided of the foreground	м.	QA PROGRAM	STATEMENT		LE	VEL & ADEQUACY
a Impection shall be performed by individuals other than these one performed the sativity being imperiod. (10-1/11-2)  b. Such persons that incertain the response suppression to the immediate suppression that the result is the same server of interesting the result of the same server operation there are results of the same server operation in the same server operation of the same single operation same server operation of the same single operation same server of the same single operation same same server and personal same server and same server and same server and same same server of the same same same server and same same same same same same same same		EVALUATION CRITERIA			N	COMMENTS
individuals other than these was performed the activity print  isspection. (10-0/11-4)  b. Such persons shall not report  ilivetly to the immediate supervisors who are responsible for the very being inspected.  (-/1-1)  3. Destination, reconvening, or tests af catactical or processed activity conditive. (10-1/11-4)  If inspection of processed material or products is impossible or classivan- topically controlled to the controlled of the cont		A program for inspection of activities affecting quality shall be established and executed by or for the organization performing the activity to verify conformation with the documented instructions, procedures, and documented instructions,	ger 24	1	1	
for the vore being imported.  (- [Al-1]  Destinations, recurrents, or tests of materials approximate prevented shall be performed prevented shall be performed for each veck operation victors by a season (cality (10-1/11-1))  If importion of processed naterial or provincts is impossible or disadvantageous, indirect control by monitoring shall be provided uses omitted and provided uses omitted and provided uses omitted and provided uses omitted as a single provided uses omitted as a single provided uses omitted as in a single provided uses omitted as its establishment of the sample is small be provided uses omitted as its establishment of the sample size and satisfication for the sample size and salies provided uses of the sample size and salies them.  The mandatory importion hold points, visich require vitnessing or important the content of the designated representative and beyond votich vork shall not proceed without the content of its designated representative are required, the specific hold points shall be indicated in appropriate documents.	2	performed the activity being				
If inspection of processed interval or processed interval or product is impossible or disadvantageous, indirect control by provided.  1.5 Interval of the provided was control to individual shall be provided was control to individual be provided was control to individual be provided was control to individual be provided which is provided was control to individual be provided which in the sampling processed without both. (10.5/11-7)  2.6 Veer a sample is used to verify security and shall provide adequate practices in the sample size and selection for the sample size and selection process. (-/11-5)  2.7 If mandatory inspection hold points, which require vitnessing or imspecting by the layer'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)		supervisors who are responsible for the work being inspected.	0000		1	
products is impossible or disadvan- ingress, indirect control by noni- toring processing nethods, emigrant, and personnel shall be previded.  3 Such inappealing and process maniforing shall be previded west control is inadequate without both. (16-5/11-7)  4 Where a sample is used to varify seceptability of a group of items, the sampling procedure shall be based on recognized standard practices and shall provide adequate hastification for the sample size and selection process. (-/11-5)  3 If mandatory inspection hold points, which require witnessing or imspect- ing by the buyer's designated representative and beyond which work shall not proceed without the consect of its designated repre- sentative are required, the specific hold points shall be indicated in appropriate docu- ments. (10-6/11-5)	-3	of materials or products processed shall be performed for each work operation where necessary to essue	24-3-4.A	1	1	
inadequate vitines both. (10-5/11-7)  Where a sample is used to verify acceptability of a group of imms, the sampling procedure shall be based on recognized standard practices and shall provide adequate fratification for the sample size and selection processe. (-/11-5)  If mandatory inspection hold points, voich require vitinessing or imspecting by the buyer's designated representative and beyond which work shall not proceed vithout the consent of its designated representative are required, the specific hold points shall be indicated in appropriate documents. (10-6/11-3)		tageous, indirect control by coni-				
sceeptability of a group of lams, the secopting procedure statil to based on recognized standard practices and shall provide adequate fractices and shall provide adequate fractices and for the sample size and selection process. (-/li-5)  If nandatory inspection hold points, voich require vitnessing or inspect- ing by the buyer's designated representative and beyond which vork shall not proceed vithout the consect of its designated repre- sentative are required, the specific hold points shall be indicated in appropriate docu- ments. (10-6/11-3)		SCALL DR SPERFINGS When amazon !				
specific hold points shall be indicated in appropriate documents. (10-6/11-3)		scorptability of a group of thems, the sampling procedure scall to based on recognized standard practices and shall provide adequate fustification for the adequate fustification				
Section 10.0 Summary Comments		voich require vithessing or imspect- ing by the buyer's designated representative and beyond which work shall not proceed vithout the consent of its designated repre- sentative are required, the specific hold points shall be indicated in appropriate docu-	14.3 See 4.4	1	v	Assume hold printe and schedus ducumented on intogention schedus
		Section 10.0 Summary Comments			_	

EM	QA PROGRAM EVALUATION CRITERIA	STATEMENT	L	L	EVEL & ADEQUACY	
168	EVACUATION CRITERIA	LOCATION	1	N	Bullet Bulleton	COMMENTS
1.0	A test program shall be established to assure that all testing required to demonstrate that items vill perform satisfactorily in service is identified and performed in accordance with virtues user procedures which Incorporate the requirements and acceptance limits contained in applicable design documents. (11-1/12-1)	14.2 24.2 2004.2			See Nam	unlet Pract
.2	Test requirements and acceptance eriteria shall be provided by the organization responsible for the design of the item under test, unless otherwise designated.  ( - /12-3)	p4-2 su4.2		V		
.3	The test progres shall include as appropriate proof tests prior to installation, preoperational tests, and operational tests during nuclear power plant operation, of structures, systems, and components.  (11-2/12-2)					
	Test procedures shall include provisions for assuring that all prerequisites for the given test have been met, that adequate test instrumentation is available and used, and the test is performed under suitable covironmental conditions.  (11-3/12-1, 5)					
	Test results shall be documented and evaluated to assure that test requirements have been satisfied.  (11-4/12-6)	84-4 54 4.5	1	1		
	Section 11.0 Summary Companies					
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EVALUATION CRITERIA  CONTROL OF MASSIRIEM AND TEST EQUIDACT  CONTROL OF MASSIRIEM AND TEST EQUIDACT  CRITERIEM  The same that toris, cages, instruments, and other measuring and testing devices used in entirities affecting prioris to maintain accuracy within necessary linites. (12-13)-1)  Inspection, measuring and test equipments shall be calibrated, adjusted equipments shall be calibrated, adjusted equipments against corruifed to equipments against corruifed equipments are found to be cut of equipments are found to be cut of equipment are found to be cut of previous inspections or tests results and of the acceptability of grevious inspections or tests results and of the acceptability of grevious inspections or tests results and of the acceptability of grevious inspections or tests.  Carpetion, measuring, or test equipment consistently front to be out of equipment without previous inspections or tests.  Records shall be maintained and found to be out of equipment without previous devices and consistently front to be out of equipment without previous transpections.  Section 12.0 Summary Comments  Section 12.0 Summary Comments	
Massures shall be established to assure that toris, cages, instruments, and other measuring and testing devices used in activities affecting quality are properly controlled, calibrated, and adjusted at specified periods to maintain accuracy vithin necessary limits. (12-1/13-1)  Inspection, measuring and test equipment shall be calibrated, adjusted and maintained against certified equipment having known valid relationships to nationally recognized standards. (-/13-2, 3)  When inspection, measuring and test equipment are found to be out of calibration, an evaluation shall be made and documented of the validity of items previous inspections or tests results and of the acceptability of items previous inspected or tested.  (-/13-7)  Records shall be repaired or  replaced. (-/13-3)  Records shall be maintained and equipment consistently found to be out of calibration shall be repaired or  replaced. (-/13-3)  Records shall be maintained and equipment equipment equipment suitably marked to indicate calibration status. (-/13-9)	COMMEN
When inspection, measuring and test equipment are found to be out of calibration, an evaluation shall be made and documented of the validity of previous inspections or tests results and of the acceptability of itoms previously inspected or tested.  (-/13-7)  Inspection, measuring, or test equip- ment consistently found to be out of calibration shall be repaired or replaced. (-/13-3)  Records shall be maintained and equipment suitably marked to indicate calibration status. (-/13-9)  Sec 4.5	
equipment are found to be one of calibration, an evaluation shall be made and documented of the validity of previous inspections or tests results and of the acceptability of itoms previously inspected or tested.  (-/13-7)  Inspection, measuring, or test equip- ment consistently found to be out of calibration shall be repaired or replaced. (-/13-3)  Records shall be maintained and equipment suitably marked to indicate calibration status. (-/13-9)  \$ 200 4.0	
replaced. (-/13-3)  Records shall be repaired or replaced. (-/13-3)  Records shall be maintained and equipment suitably marked to indicate calibration status. (-/13-9)  Sec 4.6	
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Handling storage & shipping

Heasures shall be established to control the handling, storage, shipping, cleaning and preservation of material and outliment in scendance with work and inspection instructions to prevent design of deterioration.  2 When necessary for particular products, special protective environments, such as inner gas atmosphere, apacific noisture content levels, and temperature levels shall be specified and provided (and their existence verified). (1,-2/12-24)  3 Special handling tools and equipment shall be inspected and tested in accordance with written procedures and at specified times to verify that the tools and equipment are adequately maintained ( - /12-5)  4 Special attention shall be given to providing adequate instructions for marking and labeling fur packaging, shipment, and storage of items.  Marking shall be alsequate to identify, including indication of the presence of special environments or the need for aprecial control. ( - /12-6, 7)		QA PROGRAM	STATEMENT		LE	EL & ADEQUACY	
Security shall be established to control the handling, storage, shipping, cleaning and preservation of material and equipment in secondance with work and imspection instructions to prevent dissegs or deterioration.  2 When necessary for particular products, special protective savinonments, such as input gas stoophere, apacitic nois unre centent levels, and temperature levels shall be specified and provided (and their existence verified). (13-2/13-24)  3 Special handling tools and equipment shall be inspected and tested in accordance with written procedures and at specified times to verify that the tools and equipment are adequately maintained. (-/13-5)  3 Special attention shall be given to providing adequate instructions for marking and labeling for packaging, salipment, and storage of items.  4 Special attention shall be given to identify, tanintain, and preserve the shippent, including indication of the presence of special environments or the need for special environments or the need for special environments or the need for special control. (-/13-6, 7)		EVALUATION CRITERIA	LOCATION	3	N		COMMENTS
does necessary for particular products, special protective environments, such as inort gas atmosphere, specific moisture content levels, and temperature levels shall be specified and provided (and their existence verified). (13-2/16-24)  3 Special handling tools and equipment shall be inspected and tested in accordance with written procedures and at specified times to verify that the tools and equipment are adequately caintained. (-/16-5)  4 Special attention shall be given to providing adequate instructions for marking and labeling for packaging, shippant, and storage of items.  Narking shall be adequate to identify, taintain, and preserve the shipment, including indication of the presence of special environments or the need for special control. (-/16-6, 7)		Measures shall be established to control the handling, storage, shipping, cleaning and preservation of material and equipment in accordance with work and inspection instruction.	p4-9 Sec 4.7	1	7		
anets, such as inert gas atmosphere, specific moisture content levels, and temperature levels shall be specified and provided (and their existence verified). (1]-2/12-24)  3 Special handling tools and equipment shall be inspected and tested in accordance with written procedures and at specified times to verify that the tools and equipment are adequately maintained. ( - /12-5)  4 Special attention shall be given to providing adequate instructions for marking and labeling for packaging, shipment, and storage of items. Marking shall be adequate to identify, imintain, and preserve the shipment, including indication of the presence of special environments or the need for special environments or the need for special environments or the need for special control. ( - /12-6, 7)		(13-1/14-1)					•
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providing and labeling for packaging, shipment, and storage of items. Narking shall be adequate to identify, maintain, and preserve the shipment, including indication of the presence of special environments or the need for special central. ( - /16-6, 7)	3	shall be inspected and tested in accordance with written procedures and at specified times to verify that the tools and anythere are					
		providing adequate instructions for marking and labeling for packaging, shipment, and storage of lame.					
	-	Marking shall be adequate to identify, Maintain, and preserve the shipment, including indication of the presence of special environments or the					
	-	Marking shall be adequate to identify, Maintain, and preserve the shipment, including indication of the presence of special environments or the need for special centrol. ( - /14-6, 7)					
	-	Marking shall be adequate to identify, Maintain, and preserve the shipment, including indication of the presence of special environments or the need for special centrol. ( - /14-6, 7)					
	-	Marking shall be adequate to identify, Maintain, and preserve the shipment, including indication of the presence of special environments or the need for special centrol. ( - /14-6, 7)					
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	-	Marking shall be adequate to identify, Maintain, and preserve the shipment, including indication of the presence of special environments or the need for special centrol. ( - /14-6, 7)					



	QA PROGRAM	STATEMENT .		72	VEL & ADEQUACY	
	EVALUATION CRITERIA	LOCATION	8	N		COMMENTS
0	ENFECTICE, TEST AID OPERATING STATES					
1	Hossures shall be established to indicate by use of markings such as stamps, tags, labels, routing cards or other suitable means, the status of inspections and tests performed upon individual items. (14-1/15-1, 4)					
-						
	Ressures shall also be established for indicating the operating status of items such as by tagging valves and switches, to prevent inadvertent operation. (14-3/15-7)					
1	Measures shall include procedures for control of status indicators, including the authority for applica-					
-	tion and recoval of tags, cartings, labels and starge. ( - /15-6)  Section 14.0 Summary Comments					
-	tion and removal of tags, markings, latels and stamps. ( - /15-6)					
-	tion and removal of tags, markings, latels and stamps. ( - /15-6)					
-	tion and removal of tags, markings, latels and stamps. ( - /15-6)					
-	tion and removal of tags, markings, latels and stamps. ( - /15-6)					
-	Section 14.0 Commany Comments					
-	Section 14.0 Commany Comments					



SECTION 15.0 NONCONFORMING MATERIAL, PARTS OR COMPONENTS

24	QA PROGRAM	STATEMENT		L	EVEL & ADEQUACY	
	EVALUATION CRITERIA	LOCATION	8	N		. COMMENTS
.1	Measures shall be established to control naterials, parts or components (services or activities) which do not confurm to requirements in order to prevent their inservertent use or installation. (15-1/16-1M, 8)	p4-424.5 see 4.5	,	,		
.2	Measures shall include as appropriate, procedures for identification, increasion, disposition, and notification to affected organizations. (15-2/16-2, 11)					
-3	Ronconforming items shall be reviewed and accepted, rejected, repaired or reverted in accordance with documented procedures. (15-3/16-3, 7)					
٨.	The responsibility and authority for the disposition of monoraforming items shall be defined. ( - /15-4)	p4444.5		1		
-5	Repaired and revorted items shall be reinspected in accordance with applicable procedures. ( - /16-5)					
.6	Measures which control further pro- cessing, 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 non-conforming items which have the disposition of "repair" or "use as is." (-/15-9)					
	A description of the change, veiver, or deviation that has been accepted shall be documented to record the change and denote the as-built condition. ( - /16-10)					
	Homeures shall be established for determining conconformance report- ability to purchaser. (LCCTR 50.55 (e))					
	Section 15.0 Summary Comments					
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- 1	QA PROGRAM EVALUATION CRITERIA	STATEMENT	_	LEV	VEL & ADEQUACY		
-		LOCATION	8	N		COM	MENTS
- 1	MOLICY SATIOMACO	1116			T- TOTAL PROPERTY		Line of
- 40	Measures shall be established to assure that conditions adverse to quality such	144 \$45 3 cu 4.5					
	invistions defections, deficiencies,	1 45	1	1			
- 13	promptly identified and corrected.						
- 1.5	in the case of significant conditions siverse to quality, the measures	14-5					15 12
1	condition is described and of the	1 gu 4.5	1.1	1			
-	etion taken to preclude repetition.						
1	he identification of statistions	94.4 \$ 4.5					
- 11 9	ause of the condition, and the orrective actics taken shall be	1 Lu 4.5	1	1			
14	ormented and reported to appropriate arels of management. (16-3/17-3)	2					
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	ection 16.0 Summary Compents		_	-			
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	PARTY OF THE PROPERTY OF THE PARTY OF THE PA		-				
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CUALITY ASCURANCE RECORDS  1. Sufficient reverse 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 review.  b. Inspections  c. Tests mattered testing vages to pt-1/500 49 / /  d. Audits  e. Monitoring of vork performance.  f. Material analyses.  (17-1, 2/18-1, 2, 3)  2 Records shall include closely related data such as qualifications of:  a. Personnel  b. Procedures  c. Equipment (17-1/18-1) Cultivation years the pt-1/200 pt-1/20	м	QA PRQGRAM	STATEMENT	L	LE	VEL & ADEQUACY
Sufficient records shall be easintained to furnish evidence of soil- visies affecting quality. The records shall include as least the following:  a Operating logs and the results of reviews.  b. Inspections  c. Tests material-testing vager 79  d. Audits  e. Monitoring of work performance.  f. Material analyses. (17-1, 2/18-1, 2, 2)  2. Records shall include closely related data such as qualifications of:  a. Personnel  b. Procedures  c. Equipment (17-1/18-1)  J. Inspection and test records shall, as a sinform, identify:  a. The inspector or data recorder.  b. The type of observation.  c. The results.  d. The acceptability.  s. The data of inspection are test.  c. The data of inspection are test.  c. The data of inspection are test.  c. The data of inspection are test.		EVALUATION CRITERIA	LOCATION	8	N	COMMENTS
tained to furnish evidence of soil- visies affecting quality. The records shall include at least the following:  a Operating logs and the results of review.  b. Inspections  c. Tests material-testing vager 7:  d. Audits  p 3/6-3/4-1  a. Monitoring of vork performance.  f. Material analyses. (17-1, 2/18-1, 2, 3)  2 Records shall include closely related data such as qualifications of:  a. Personnel  b. Procedures  c. Equipment (17-1/18-1)  J. Records shall include closely related data such as qualification of:  a. Personnel  b. Procedures  c. Equipment (17-1/18-1)  J. The inspection and test records shall, as a statem, identify:  a. The inspector or data recorder.  b. The type of observation.  c. The results.  m. waterial solution is finished inclined as soluted.  f. The acceptability.  s. The data of inspection are test.	7.0	QUALITY ASSURANCE RECORDS		T		
of review.  b. Inspections  c. Tests whatter in testing veget 7:  d. Audits  e. Monitoring of work performance.  f. Material analyses. (17-1, 2/10-1, 2, 3)  2 Records shall include closely related data such as qualifications of:  a. Personnel  b. Procedures  c. Equipment (17-1/10-1)  c. The inspection and test records shall, as a sininum, identify:  a. The inspection of data recorder.  The type of observation.  c. The results.  d. The acceptability.  e. The section regarding deficiencies onted.  f. The data of inspection or test.	.1	tained to furnish evidence of acti- vities affecting quality. The records shall include at least				
c. Tests multiply testing regards  d. Audits  e. Monitoring of vork performance.  f. Material analyses.  (17-1, 2/18-1, 2, 3)  2 Records shall include closely related data such as qualifications of:  a. Personal  b. Procedures  c. Equipment  (17-1/18-1)  Inspection and test records shall, as a sinfum, identify:  a. The inspector or data recorder.  b. The type of observation.  c. The results.  m. Material years  f. The acceptability.  c. The acceptability.  c. The acceptability.  c. The sceptarding deficiencies moted.  f. The data of inspection are test.		a Operating logs and the results of reviews.	1941 su 49	-	1	
d. Audits  e. Monitoring of vork performance.  f. Material analyses. (17-1, 2/18-1, 2, 3)  2 Records shall include closely related data such as qualifications of:  a. Personnel  b. Procedures  c. Equipment (17-3/18-1) (17-3/18-1)  Transpection and test records shall, as a sinfram, identify:  a. The inspector or data recorder.  b. The type of observation.  c. The results.  d. The saceptability.  e. The saceptability.  e. The saceptability.  e. The saceptability.  e. The saceptability.  f. The data of inspection or test.			V4-11 500+.9	1	V	
a. Monitoring of vork performance.  f. Material analyses. (17-1, 2/18-1, 2, 3)  2 Records shall include closely related data such as qualifications of:  a. Personnel  b. Procedures  p.4-11 9cc 4.9  c. Equipment (17-1/18-1)  Inspection and test records shall, as a unitum, identify:  a. The inspector or data recorder.  c. The rype of observation.  c. The results.  d. The acceptability.  e. The section regarding deficiencies noted.  f. The data of inspection or test.		a. Tests material testing reports	pt-11 sec 4.9	+	1	
e. Monitoring of vork performance.  f. Material analyses. (17-1, 2/15-1, 2, 3)  Records shall include closely related data such as qualifications of:  a. Personnel  b. Procedures  c. Equipment (17-3/18-4)  C. Equipment (17-3/18-4)  Traspection and test records shall, as a minima, identify:  a. The inspector or data recorder.  b. The type of observation.  c. The results.  d. The soceptability.  e. The section regarding deficiencies could.  f. The data of inspection or test.			p3,6-3.14.1	1	1	
f. Naterial analyses. (17-1, 2/16-1, 2, 3)  Records shall include closely related data such as qualifications of:  a. Personnel  b. Procedures  c. Equipment (17-1/16-1)  c. Equipment (17-1/16-1)  c. Equipment (17-1/16-1)  c. Equipment (17-1/16-1)  c. The inspection and test records shall.  as a miniman, identify:  a. The inspector or data recorder.  b. The type of observation.  c. The results.  d. The acceptability.  e. The section regarding deficiencies moted.  f. The data of inspection or test.						
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b. Procedures  o. Equipment (17-3/18-b) Culitystim years p4-6  Gas 4.6  Inspection and test records shall, as a sintene, identify:  a. The inspector or data recorder.  b. The type of observation.  c. The results.  d. The section regarding deficiencies noted.  f. The data of inspection or test.	.2	related data such as qualifi- cations of:	P3-15 P3-15	1	1	
a. Equipment (17-1/18-4) Culitratin Yuarit 644.6  Inspection and test records shall, as a minimum, identify:  a. The inspector or data recorder.  5 cc p 4 f 5 cc f 5  b. The type of observation.  c. The results.  d. The acceptability.  e. The section regarding deficiencies moted.  f. The date of impection or test.			04-11 500 4.9	1	7	
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b. The type of observation.  c. The results.  d. The acceptability.  e. The section regarding deficiencies noted.  f. The date of imposition or test.	.3	Inspection and test records shall, as a minimum, identify:				See p4. + see + 5
d. The acceptability.  e. The action regarding deficiencies sould.  f. The date of imposition or test.		b. The type of observation.				mistry white intens covers
d. The acceptability.  e. The section regarding deficiencies noted.	1		The second second second			m weekly rejusts
f. The date of inspection or teas.	1	d. The acceptability.				
f. The date of inspection or test. (17-4/18-54)		e. The action regarding deficiencies noted.				
		f. The date of inspection or test. (17-4/18-94)				
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SECTION 17.0 QUALITY ASSURANCE RECORDS

	GA PRÓGRAM	STATEMENT			VEL & ADEQUACY	
	EVALUATION CRITERIA	LOCATION	8	N	BENDER OF	COMMENTS
a	WALLTY ASSURANCE RECORDS (Contd.) Scords shall be identifiable and retrievable. (17-5/18-5)	194 H 649	1	1		
P	ecords shall be indexed, filed, and maintained in facilities that rowide suitable environment to inimize detaritration or damage and to prevent loss. ( - /18-10)	P \$10 \$4+1 800 \$17		1		
	equirements for record storage ransmittal, rotantion and sintenance shall: . Be established and documented;		П	,		
1	. Be consistent with applicable codes and standards;	p4-12-5-4-7	-	v		
c	. Se consistent with applicable produrement documents, and					
d	Designate assigned respon- sibility. (17-6/18-7)	p4-11 sec +3	1	1		
(	- /18-3, 9)					
_						
The state of the s						
				1.5		



	CA PROGRAM	STATEMENT		LEV	VEL & ADEQUACY
1	EVALUATION CRITERIA	LOCATION	8	N	COMMENTS
.0	AUDITS				
-	Comprehensive system of planned and periodic audits shall be carried out to:  a. Verify compliance with all aspects of the QA program.	P3.4	1	1	
	(18-1/19-1, 5) b. setermine the effectiveness of	P3-1543-10	1	7	Done by Management Review
2	the progres. (18-1/19-7, 10, 11)	p 3.7 3.2		1	- Ar y vogva.
	a. When it is necessary to deter- mine the capability of a sub- contractor's quality assurance progress prior to swerding of contract or purchase order.	gw 3.			
	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 decuments.				in progress the condition of the sale was to the sale was
	c. When significant changes are cade in functional areas of the quality assurance program, including significant reorganizations and procedure revisions.				in progress the constant
	d. When it is suspected that safety, performance, or reliability of the item is in jeopardy due to deficiencies and nonconformance in the quality assurance program.				require
	e. When a systematic, independent assessment of progrem effect- iveness or item quality or both is considered necessary.	-			
	f. When it is considered necessary to verify implementation of required corrective actions. ( - /19-1) to 19)	P3-9 \$3-10 Ser 3,4,1		1	



1	QA PROGRAM	STATEMENT	LEVEL & ADEQUACY		
4	EVALUATION CRITERIA	LOCATION	8 N	COMMENTS	
	ALDITS (Contd)	135			
-	Audits shall be performed in accordance with written procedures on checklists by appropriately trained personnel not having direct responsibilities in the	P 350 3.3.1	111	411 and its	
1 0	areas being audited. (18-2/19-2)	P 3500 3.3.0	111	411 940.19	
	An audit plan should be developed to provide information about the audit, such as the functional ureas to be audited, the names and assignments of these who vill perform the audit and the scheduling arrangements, and the nathed of	1360			
1	reporting findings and recommends-				
9	desponsible management shell take secessary action to correct the efficiencies revealed by the audit /19-4)	P3.9 3.4.1	1	Internal Audit	
1	undit results shall be documented and reviewed by management having esponsibility in the area sumited. 18-3/19-3)	139 +3-10 543.4.1	11	Enternal Audit	
F	ollow-up action, including results f deficient areas, shell be taken here indicated. (18-4/19-8,9)	U39 +3-10	. ,		
	here indicated. (18-4/19-8 9)	1 . 141			
	ection 18.0 Sumary Comments	su3.7.1	. 1		
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		1 4u3A1	11		
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		4 4 4 A 1	11		
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		3 w 3 A 1	11		
		4 w 3 A 1	11		
		3 w 3 A 1	111		

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Wester 4-1-77 10:30 Tony Tarmera - Suls. Bil Moore Canonie

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FIELD QUALITY ASSURANCE MIDLAND, MICHIGAN

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

Attention: Mr. J. L. Corley

# Bechtel Power Corporation

Post Office Box 2187 Midland, Michigan 48640



DEH

RGW GT8

DAB

FILE

May 13, 1977

Job 7220 Midland Project Subcontract 7220-C-210 Addendum to Canonie Construction 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 Canonie 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

CONSTRUCTION CO. / P.O. BOX 509 / U.S. 31 & M-43 / SOUTH HAVEN, MICHIGAN 49090 / (616) 627-1171

May 3, 1977

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

BECHTEL POWER CORP. JOB 7220 PER 15/5)

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 44-7, 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

Quality Assurance Engineer, Canonie Construction Co.

J. K. McKane

Vice President, Earthmoving Division:

Manager of Quality Assurance, Canonie Construction Co.

WRM/bw

Enclosures (1/1)

cc: J.K. McKane



Page 1 of 13

Rev:

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



Page 2 of 13

### 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 Canonic Construction Co. acceptance of the policies and procedures defined therein.

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

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



### Page 3 of 13

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 Eased 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 by 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



Page 4 of 13

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

## 2.0 Quality Control Program

- 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 DUG 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

- New or revised drawing will be routed to assure all personnel concerned are aware of change. A list of document assignees shall be mainta ned 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 oided.
- 6.5 Document control shall not be confised 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

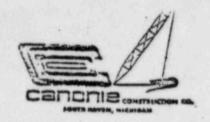


### Page 6 of 13

perform the document control function. Documentation shall be a function of the QC Engineer and shall show all pertinent information as required by contractors 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.
  - 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.
- 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, ie. excessive precipitation causing moisture content of cohesive soils to exceed acceptance criteria and preclude conformance to compaction requirements.



### Page 7 of 13.

- 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.
- Guality 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



#### Page 8 of 13

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 h
  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 <u>Guality Assurance/Control Records</u>
  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.
- 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.



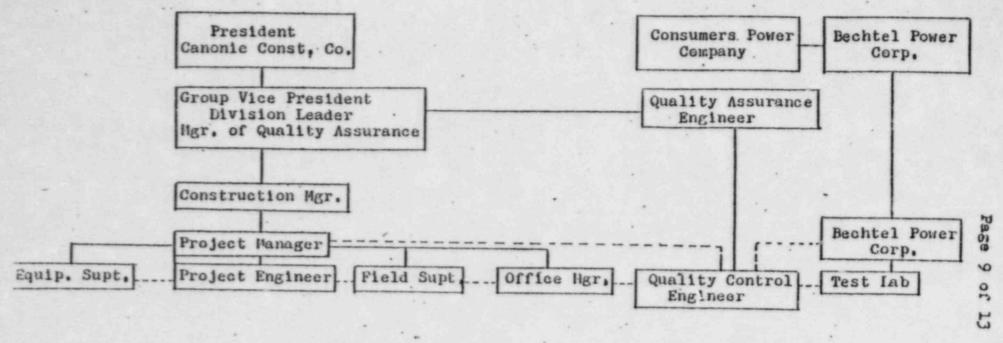
### Page 8-A of 13

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.



### Hidland Station Units 1&2

### Plant Foundation Excavation & Cooling Pond Dikes



Direct Responsibility

----- Communication

Rev. 3, dated 4/5/7



Figure 2 Rev. 1, 7/26/73

P.M.\_

G.S.-F.S.

Page 10 of 13-

### MIDLAND NUCLEAR UNITS 1&2 CANONIE CONSTRUCTION CO.

### LIFT THICKNESS CHECK

DATE:	
LENGTH:	2.4%
WIDTH:	1 1 1

BEFORE AFTER LIFT THICKNESS

AFTER

BEFORE AFTER

OBSERVATION NUMBER:\_\_\_\_

ZONE:

OFFSET:

ELEVATION: BEFORE

STATION: TO STATION:

AVERAGE LIFT THICKNESS\_

BEFORE \_\_\_ AFTER \_\_\_ LIFT THICKNESS\_\_\_\_

LIFT THICKNESS

LIFT THICKNESS

REMARKS/SKETCH:

CANONIE CONSTRUCTION CO. QC REPRESENTATIVE



Figure 3 Rev. 1, 7/26/73

Page 11 of 13

	MIDLAND NUCLEAR UNICANONIE CONSTRUCTION PLACEMENT QA-QC DA	on co.	P.M. G.S. P.3.
FEATURE: () EMERGENCY COOLING () PLANT AREA FILLS () R/R EMBANKMENT () LAYDOWN AREA () COOLING POND DIKE  ZONE: () 1 () 4 () 1-A () 4-A () 2 () 5 () 3 () 6  LOAD COUNT		DATE: SHIFT: WEATHER: FOREMAN: ELEVATION: STATION: OFFSET: MOISTURE TESTS	TO STA:
EQUIP. NO. TYPE	FREQUENCY	TIME	SPEED

REMARKS/SKETCH:



Figure 4
Rev. 2, 4/12/74

Page 12 of 13

MIDLAND NUCLEAR UNITS 1&2

AREA:						
( ) COOLING FOND ( ) DIKE FOUNDATIO	N		DATE: GRID LOCAT	ION:		
MATERIAL:						
( ) IMPERVIOUS ZON ( ) IMPERVIOUS ZON ( ) RANDOM	E 1-A		APPROXIMAT	E ELEV:		
SKETCH:						
The above area material conforming therefore, has been	t to the red	ulimaman	THE MY WHA ME	suitable a pecificati	mount of on and.	
It is understountil there occurs materials.	d that the	borrow ange in	pit shall :	remain so teristic o	designate f the exc	d
REMARKS:						

BY: BECHTEL POWER CORP.



Figure 5 Rev. 1, 7/26/73

### MIDLAND NUCLEAR UNITS 1&2 CANONIE CONSTRUCTION CO.

_		-	_	_
G	. 5			
F	.S			

	DEFICIENCY CORRECTIVE ACTIO	N REPORT	
DATE:	The state of the s	SHIFT:	
FEATURE:_		FOREMAN:	****
		ELEVATION:	
DEFICIENCY	•		• • •
			. :
CORRECTIVE	ACTION:		
		x 1 (1) (1) (1) (1) (1)	
SUGGESTED :	PREVENTATIVE MEASURES:		
CORRECTIVE	ACTION QUALITY ASSURANCE:		
	TESTING:		
	OTHER:		
SKETCH (IF	REO'D):		100
			200

Y:

CANONIE CONSTRUCTION

## Bechtel Power Corporation

Post Office Bex 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 Construction Company Q.A. Program Dated 4-5-77, Rev. 3 BCCC-2523

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

Dear Mr. Corley:

We are reviewing the subject addendum to Canonie 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. Newger

JFN/JCC/JV/djm

Enclosure

cc: J. Connolly

T. C. Cooke

G. L. Richardson

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

May 3, 1977

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

BECHTEL POWER CORP 108 7220 PER人芸学生」

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.
- 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 subcortract.

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

Quality Assurance Engineer, Cononie Construction Co.

TU / TE MOYOR

Vice President, Earthmoving Division;

Manager of Quality Assurance, Canonie Construction Co.

WRM/bw

Enclosures (1/1)

cc: J.K. McKane



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Rev:

Canonie Construction Co. Addendum to:

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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### Item I, changes:

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:

Add to para. 2, section 1.0, Introduction:

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 Canonic 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



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this manual and applicable code and regulatory requirements.

Lelete 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 Eased 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 by 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/out 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 Angineer shall work closely with the project manager and QC Engineer to establish survey and



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

### 2.0 Quality Control Program

- 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.



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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 Surmary List shall be maintained listing:

Stick Number
Drawing Number
Title
Revision and Date
Status: Preliminary
or Approved

- 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



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perform the document control function. Documentation shall be a function of the QC Engineer and shall show all pertinent information as required by contractors 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 cutlined 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 testfills within the embankment as required to determine pass requirements for each individual type compactor.
  - 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, ie. excessive precipitation causing moisture content of cohesive soils to exceed acceptance criteria and preclude conformance to compaction requirements.



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- 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.
- Pechtel 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 Arca
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



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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 <u>Guality Assurance/Control Records</u>
  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.
- 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.



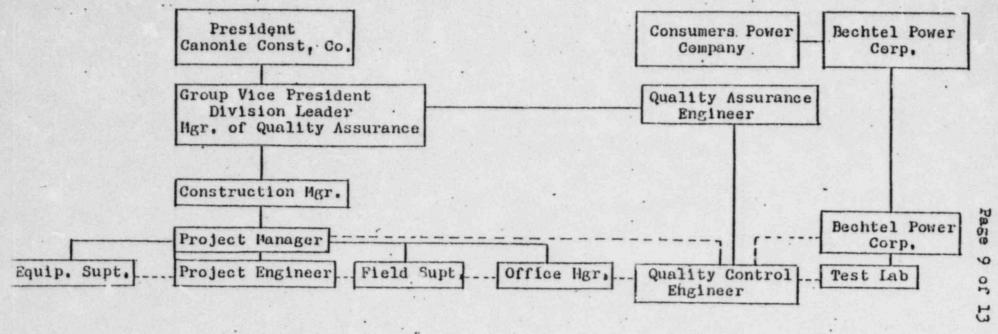
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18.6 Where necessary to establish objective evidence of implementation, corrective action shall be verified by the performance of re-audits of those areas previously determined to be non-conforming.



### Midland Station Units 1&2

### Plant Foundation Excavation & Cooling Pond Dikes



Direct Responsibility

----- Communication

Rev. 3, dated 4/5/7



Figure 2 Rev. 1, 7/26/73

> P.M. G.S. F.S.

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### HIDLAND NUCLEAR UNITS 1&2 CANONIE CONSTRUCTION CO.

### LIFT THICKNESS CHECK

	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	TEICKNESS	

REMARKS/SKETCH:

CANONIE CONSTRUCTION CO QC REPRESENTATIVE				
	CAN	MONTE	CONSTRUCTION	20



Figure 3 Rev. 1, 7/26/73

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FILL	CANONIE CON			G.S. F.S.	
FEATURE: () EMERGENCY COOLING () PLANT AREA FILLS () R/R EMBANKMENT () LAYDOWN AREA () COOLING POND DIKE  ZONE: () 1 () 4 () 1-A () 4-A () 2 () 5 () 3 () 6			DATE: SHIFT: WEATHER: FOREMAN: ELEVATION: STATION: OFFSET: MOISTURE TESTS:	TO STA:_	
LOAD COUNT					_
COMPACTION EQUIPMENT:					
EQUIP. NO. TYPE	FREQUE	NCY	TIME	SPEED	
		_			



Figure 4
Rev. 2, 4/12/74

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MIDLAND NUCLEAR UNITS 1&2

P.M.

	P.S.
BORROW P	IT ACCEPTANCE
AREA;	취업되었다. 보고 있는 이 사람들이 되었다.
( ) COGLING POND	DATE:
( ) DIKE FOUNDATION	GRID LOCATION:
MATERIAL:	
( ) IMPERVIOUS ZONE 1 ( ) IMPERVIOUS ZONE 1-A	APPROXIMATE ELEV:
( ) RANDOM	
SKETCH:	
The above area has been foun aterial conforming to the requirement therefore, has been classified a	nd to contain a suitable amount of rements of the specification and, borrow area.
It is understood that the bountil there occurs a marked chang aterials.	errow pit shall remain so designated ge in the characteristic of the excava
REHARKS:	
日本社会(法国特别主义)	

BY: CAMOUTE CONSTITUTION CO.

BY: BECHTEL POWER CORP.



# MIDLAND NUCLEAR UNITS 122 CANONIE CONSTRUCTION CO.

P.M.	
G.S.	
F.S.	

	DEFICIENCY CORRECTIVE	ACTION REPORT		
DATE:	TIME:	Manager and the second	SHIFT:	- 14 1
FEATURE:			FOREMAN:	
			ELEVATION:	
DEFICIENCY				
CORRECTIVE	ACTION:			

SUGGESTED :	PREVENTATIVE MEASURES:		
CORRECTIVE	ACTION QUALITY ASSURANCE:		
	TESTING:		

SKETCH (IF REQ'D):

BECHTEL POWER CORP.

h . . . .

OTHER:

BY: CANONIE CONSTRUCTION CO.