11/15/82

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	)	
	)	Docket Nos. 50-329-OM
CONSUMERS POWER COMPANY	)	50-330-OM
	)	50-329-OL
(Midland Plant, Units 1 and 2)	)	50-330-OL

TESTIMONY OF W. BIRD AND R. WHEELER CONCERNING NCR #M01-4-2-008 (Rev. 1) (February 25, 1982), NCR #MO1-9-2-038 (March 8, 1982), NCR #MO1-9-2-051 (April 21, 1982), BECHTEL NCR #4199 (including stop work order FSW-22), and BECHTEL NCR #4245

Q.1. Please state your names and jobs.

A.1. My name is Walt R. Bird. I am Manager, Midland Project Quality Assurance Department ("MPQAD"). My resume is attached. I have reviewed and am familiar with the nonconformance reports listed above. These nonconformance reports are included as Attachments 7A, 7B, 7C, 7D and 7E to the Testimony of R. J. Cook, R. B. Landsman, R. N. Gardner and W. D. Shafer with respect to Quality Assurance as filed on October 29, 1982, and therefore they are not included in this testimony.

My name is Robert M. Wheeler. I am Soils Section Head in Consumers Power Company Midland Construction Department. I am a graduate of Michigan State University with a Bachelors degree in Civil Engineering and have over 8 years experience

in nuclear power plant construction. My responsibilities include implementation of the NRC-CPCO Work Authorization Procedure dated August 12, 1982, and I am involved with the Excavation Permit System, FIC 5.100, described in this testimony.

Q.2. Mr. Bird, can you please explain the purpose of this testimony?

A.2. The purpose of this testimony is to provide additional information on these nonconformance reports as requested by the Licensing Board in its July 7, 1982 Memorandum and Order.

Q.3. Gentlemen, have you read the October 29, 1982 testimony of Dr. Landsman (Question and Answer 5) with respect to these nonconformance reports and do you agree with him?

A.3. We have read it and we agree with Dr. Landsman.

Q. 4. Mr. Bird, can you please describe NCR #M01-4-2-008 and NCR #M01-9-2-038.

A. 4. NCR #M01-4-2-008 (Landsman Attachment 7A) concerns a forty-two inch - forty foot deep hole which was drilled to provide a construction aid to assemble construction equipment. It was Bechtel's construction practice at that time that control of such excavations was by Field Engineering ("FE") and a FE-administered excavation permit system was in place and used in this case. The FE system involved checking to ensure no underground utilities would be contacted. Moreover, the applicable Bechtel specification, C-211, required that backfilling of such excavations meet certain requirements including the involvement

of the On Site Geotechnical Engineer. However, the drilling itself of the hole was not required to be done under the supervision of the on-site Geotechnical Engineer.

NCR #MO1-9-2-038 (Landsman Attachment 7B) concerns drilling of two four inch by forty-eight foot test borings to obtain information on soil conditions in the vicinity of the freezewall. One of these holes was in Q fill, one was not. The method used for drilling and soil stabilization was not specifically covered by instructions, procedures or drawings for the two borings, but was in accordance with current accepted construction practice. While NCR #MO1-9-2-038 states that "The on-site Geotech was not aware of the drillings or grouting of [the hole in Q Fill]," Bechtel has since provided information indicating that the on-site Geotech was present for the grouting of the hole in Q-fill.

These two nonconformance reports were written because it was my position and MPQAD's position that there should be specific controls pre-established and documented for excavation, including drilling, in Q-fill areas as such activities (even though not themselves safety-related) could affect the quality of the fill and could potentially damage Q-listed utilities. This position has prevailed and is specifically provided for by FIC 5.100 entitled Excavation Permit System. (Attachment 1) The earlier FE-administered system was not included in the formal Quality Program and did not include the rigorous requirements presently adopted in Attachment 1.

Q.5. Mr. Bird, can you please describe Bechtel NCR #4199 and #4245 (Landsman Attachments 7E and 7D respectively.)?

A.5. Bechtel nonconformance reports #4199 and #4245 cover damage to a "Q" deep electric duct bank and a void adjacent to the upper portion of the permanent observation well OBS #4.

The duct bank was damaged on April 24, 1982, during drilling of an ejector well for the freeze wall monitoring pit. This happened because the drilling rig was mispositioned by a couple of feet. The root cause of the nonconformance was that the procedural control to not drill closer than two feet to any known buried utility for vertical holes was not adequately implemented. When obstruction was encountered Field Engineering apparently believed that they were hitting a concrete overpour around the duct bank rather than the duct bank itself. They continued drilling until drilling fluid was lost. Subsequently the fluid was observed in the auxiliary building and it was ascertained that the drill had hit the edge of the duct bank. Consumers Power Company Site management stopped further addition of drilling fluid on April 28, 1982 as a result of their involvement in the immediate investigating of the drilling fluid found in the auxiliary building. The CPCo Site Manager issued a letter on April 28, confirming the verbal stop work directive applicable to all drilling operations and sheet-piling activities by Mergantime Corporation and its subcontractors, in all Q and non-Q areas. MPQAD management later issued a formal Quality Stop Work Order to provide tracking and close-out of the

corrective action required to lift the stop work. The stop work order was subsequently lifted based on further training and implementation of the excavation permit procedure FIC 5.100 described below.

With respect to NCR #4245, the void associated with observation well #4 appears to be a localized phenomenon near the surface of the well, which was observed on May 11, 1982 during drilling. This void is apparently only indirectly related to another condition associated with OBS #4 observed at approximately the same time, that being the penetration of a twelve inch non-"Q" condensate drain line at a depth of 38 ft. The striking of the line and associated vibration may have contributed to the void formation. The remainder of the void is thought to be from material removal resulting from the drilling process. A final Engineering Report on this subject awaits completion of probing to determine the extent of soil disturbance. The specification for well drilling has been revised to restrict the position of the bailer in relation to the bottom of the casing which should limit excess soil removal for any future application of this drilling technique.

The review prior to drilling for utilities in the vicinity of OBS#4, missed the condensate line because the drawing showing this line was not on the list of drawings requiring review. The new excavation permit system (Attachment 1) has attached to it a listing of drawings, by discipline, which represents the most complete information available on all underground utilities at the Midland site.

Q.6. Mr. Bird, can you please describe what happened in NCR #MO1-9-2-051 (Landsman Attachment 7C)?

A. 6. During the excavation and/or concrete removal of an existing electrical duct bank adjacent to the southwest corner of the borated water storage tank valve pit, a small void was created beneath the southwest corner of the Borated Water Storage Tank valve pit. The void created beneath the valve pit corner was approximately two feet (maximum) in depth and extended approximately one and a half feet (maximum) horizontally beneath the foundation.

Immediate corrective action was taken, as indicated in block 34 of this NCR, to correct the void created. This NCR also indicated the need to revise the Field Engineering - administrated excavation permit system to address stricter controls for the protection of structures or utilities encountered within the confines of the excavation or in the proximity of the excavation. This concern was addressed in the preparation of FIC 5.100 (Attachment 1), the new excavation permit procedure. Some examples of revisions in the excavation permit procedure are as follows: The new excavation permit procedure, specifically section 6.5, requires the On Site Geotechnical Engineer to determine the influence of the proposed work on adjacent structures or utilities and whether the proposed action to be taken is adequate. The new excavation permit procedure, specifically 6.7, also requires a signature by MPQAD for excavation permits in Q-listed areas. This

sign-off indicated an awareness of the work and that appropriate plans to provide QA/QC coverage will be available. The new excavation permit procedure, specifically 6.9, also more descriptively states the requirements for the monitoring performed by the Onsite Geotechnical Soils Engineer.

Q.7. What specific corrective action has been or will be taken to remedy nonconforming or indeterminate conditions resulting from the incidents described above?

NCR #MO1-4-2-008 (the 42" by 40 ft. deep hole drilled as a construction aid), NCR #MO1-9-2-038 (the test boring in Q. fill), NCR #4199 (the "Q" deep electric duct bank), and NCR #4245 (the void associated with observation well OBS #4) all have resulted in disturbed soil conditions which may require further investigation, excavation and backfill. The damage to the "Q" deep electric duct bank must be evaluated and repaired. Plans are now being prepared by Bechtel to carry out such repair work. Such work will, of course, be subject to the NRC-CPC work authorization procedure and the excavation permit procedure FIC-5.100 described in this testimony.

The small void under the BWST valve pit corner has already been corrected.

Q.8. Mr. Wheeler, can you please describe the procedures which have been implemented to correct problems associated with drilling operations to protect existing buried installations?

A.8. Bechtel procedure FIC-5.100 entitled "Excavation

Permit System" Rev. 1 dated June 24, 1982 (attachment 1) has been issued to provide protection of existing buried installations. The scope of this procedure covers all excavations in "Q" and non-Q soils areas. All anticipated excavations including drilled holes, pile driving and open pit excavations, are subject to the requirements of the procedure and a permit with the proper signatures are obtained before commencement of the work. The necessary signatures include the following:

A. Bechtel Field Engineering's signature indicates that there has been a review of existing underground utilities and appropriate action taken to protect them. FE also identifies any structure or utility which will be encountered within the confines of the excavation.

B. Bechtel lead Civil Engineer's signature shows that he has examined the need for additional procedures.

C. Bechtel Onsite Geotechnical Engineer determines the influence of the proposed work on adjacent structures or utilities and whether the action to prevent any such damage is adequate.

D. CPCo construction signs off as verification that the work is authorized by NRC.

E. MPQAD sign off (which is required only for work in Q soils) indicates an awareness of the work and that appropriate QA/QC coverage will be available.

In addition to the excavation permit system described above, on August 12, 1982 a joint NRC Region III and CPCo work authorization procedure was instituted to avoid any misunderstandings as to the work which has been authorized by the NRC. The NRC and CPCo work Authorization Procedure requires that CPCo submit a written list of activities anticipated over the next 60 days to the NRC at the beginning of each month. NRC authorization for the submitted work activities is provided in writing. Work will not commence on any work activity unless written authorization is received from the NRC Region III. A copy of this Work Authorization Procedure is included as Attachment H to the testimony of James G. Keppler dated October 29, 1982.

In order to control the ASLB Order work activities with Bechtel, a separate administrative guideline entitled "Soils Work Permit System" was issued and implemented. This system requires Bechtel to provide notification to affected parties of planned work and to obtain CPCo construction approval of the planned work.

The NRC/CPCo work authorization procedure and the Bechtel/CPCo soils work permit system provide adequate controls to ensure that only NRC authorized work may be implemented. I am personally responsible for seeing to it that these two work authorization procedures are followed, and I am confident that they will be followed.

Q. 9. Gentlemen, based on the procedures outlined above, do you believe that these are adequate controls to prevent damage to underground utilities?

A. 9. Yes. We believe this is true even though it can be expected that some temporary or non-Q underground utilities may continue to be encountered during drilling or excavation operations. Unfortunately our records for non-Q or temporary utility buried installations are not good enough to completely eliminate any chance of such occurrences. However, the excavation permit system procedure requires that after encountering a utility concurrence to proceed must be obtained by three organizations including MPQAD. The procedure requires a conscious formal assessment and disposition of any encountered utility.

It also should be noted that any utilities which might unexpectedly be encountered during the Service Water Pump Structure and Auxiliary Building underpinning are addressed and dispositioned via Specification 7220-C-200(Q) entitled "Technical Specification for Identification and Initiation of Administrative Action and Corrective Measures for Underpinning Activities at the Auxiliary Building, Feedwater, Isolation Valve Pits and Service Water Pump Structure" (App. E., pp. E-2 and E-3). A copy of Specification 7220-C-200(Q) is included as Attachment 2 to the October 29, 1982 testimony of R. J. Cook, R. B. Landsman, R. N. Gardner, and W. D. Shafer. Therefore, we believe we are adequately prepared for this contingency if it arises during the underpinning work.

TO: [illegible] Dan Book

10 /

CHANGE SHEET

2nd CHANGE SHEET

PROCEDURE: FIC - 5.100

REV No: 1

CONTROLLED

Field Procedure Exc. Permit is changed as follows:

"Attachment C" to this procedure shall be modified as shown on the affixed copy.

Testimony of W. Bird & R. Wheeler
Attachment 1 11/15/82

Bechtel Power Corporation
Midland Project Units 1 & 2
Job 7220

Dan Wolf P.S.

REV 1 8/2/82

List of Reference Drawings For Underground Utilities

Multi-Discipline

FSK-CY-52, Sheet 1
FSK-CY-52, Sheet 2
FSK-CY-52, Sheet 3
FSK-CY-52, Sheet 4
FSK-CY-52, Sheet 5
FSK-CY-52, Sheet 6
FSK-CY-250
FSK-CY-251
FSK-CY-252
FSK-CY-253
FSK-CY-254
FSK-CY-255
FSK-CY-256
FSK-CY-257
FSK-CY-258
FSK-CY-259
FSK-CY-260
FSK-CY-261
FSK-CY-262
FSK-CY-263
FSK-CY-264
FSK-CY-265
FSK-CY-266
FSK-CY-267
FSK-CY-268
FSK-CY-269
FSK-CY-270
FSK-CY-271
FSK-CY-272
FSK-CY-273
FSK-CY-274

List of Reference Drawings For Underground Utilities

Civil

C-3
C-4
C-5
C-6
C-7
C-8
C-42
C-43
C-46
C-51
C-52
C-57
C-71
C-82
C-91
C-92, Sheet 1
C-92, Sheet 2
C-92, Sheet 3
C-93
C-131
C-132
C-133
C-134
C-135
C-699
C-987
C-992
C-993, Sheet 1
C-998
C-1190
C-1310
C-1311
C-1312
C-1313
C-1314
C-1315
C-1316
C-2016
C-2017
C-2018
C-2019
7220-C-195-36
C-127
C-128

List of Reference Drawings For Underground Utilities

Electrical

E-500, Sheet 2A
E-500, Sheet 2B
E-500, Sheet 2C
E-500, Sheet 2D
E-500, Sheet 2E
E-500, Sheet 3A
E-500, Sheet 3B
E-500, Sheet 3C
E-500, Sheet 4A
E-500, Sheet 4B
E-500, Sheet 4C
E-500, Sheet 4D
E-500, Sheet 5A
E-500, Sheet 5B
E-500, Sheet 5C
E-500, Sheet 5D
E-500, Sheet 5E
E-500, Sheet 12
E-501, Sheet 1
E-501, Sheet 2
E-502, Sheet 1
E-504, Sheet 1
E-505, Sheet 1
E-506, Sheet 1
E-508
E-509, Sheet 1
E-510, Sheet 1
E-511
E-512, Sheet 1
E-513, Sheet 1
E-520
E-521, Sheet 1
E-522, Sheet 1A
E-522, Sheet 1B
E-522, Sheet 1C
E-522, Sheet 1D
E-522, Sheet 2A
E-522, Sheet 2B
E-522, Sheet 2C
E-522, Sheet 3

List of Reference Drawings For Underground Utilities

Electrical

E-523, Sheet 1
E-523, Sheet 3
E-526, Sheet 1
E-526, Sheet 2
E-526, Sheet 3
E-526, Sheet 4
E-526, Sheet 5
E-526, Sheet 6
E-526, Sheet 7
E-527, Sheet 1
E-527, Sheet 2
E-528, Sheet 3
E-529, Sheet 1
E-529, Sheet 2
E-530, Sheet 1
E-530, Sheet 2
E-531, Sheet 1A
E-531, Sheet 1B
E-531, Sheet 1C
E-531, Sheet 1D
E-531, Sheet 2
E-532, Sheet 1
E-543, Sheet 1
E-547, Sheet 1
E-594, Sheet 1
E-595, Sheet 1
E-596, Sheet 1
E-600, Sheet 1
E-601, Sheet 1
E-698, Sheet 1
E-698, Sheet 2
E-698, Sheet 3
E-698, Sheet 4
E-699, Sheet 1
E-699, Sheet 2
FSK-EY-3
FSK-EY-9
FSK-EY-17
FSK-EY-38
FSK-EY-45
FSK-EY-38 Sheet 1

List of Reference Drawings For Underground Utilities

Mechanical

M-58, Sheet 1
M-58, Sheet 2
M-152
M-165
M-166
M-167
M-168
M-169
M-170, Sheet 1
M-170, Sheet 2
M-607, Sheet 16
M-612, Sheet 7
M-612, Sheet 8
M-613, Sheet 7
M-613, Sheet 8
M-649, Sheet 1
M-649, Sheet 2
M-649, Sheet 3
M-665, Sheet 1
FSK-MPY-16, Sheet 1
FSK-MPY-16, Sheet 2
FSK-MPY-18
FSK-MPY-24
FSK-MPY-29
FSK-MPY-32
FSK-MPY-33
FSK-MPY-45
FSK-MPY-46
FSK-MPY-72
FSK-MPY-98
FSK-MPY-108
FSK-MPY-165
FSK-MPY-166
FSK-MPY-167
FSK-MPY-168
FSK-MPT-1-1
FSK-MPT-1-2, Sheet 1
FSK-MPT-1-2, Sheet 2
FSK-MPT-1-2, Sheet 3
FSK-MPT-1-2, Sheet 4

FIC - 5.100
Attachment C
Rev 1

List of Reference Drawings For Underground Utilities

Mechanical

FSK-MPT-1-35
FSK-MPT-2-1
FSK-MPT-2-2
FSK-MPT-2-4
FSK-MPT-2-44, Sheet 1
FSK-MPT-2-44, Sheet 2
FSK-SP-561, Sheet 3
FSK-M-2HBC-4-2
FSK-M-2HBC-4-3
FSK-M-2HBC-497-1
FSK-M-2HBC-497-3
FSK-M-2HBC-498-1
FSK-M-2HBC-498-2
FSK-M-OCCC-1-1
~~FSK-M-ODBC-4-1~~
FSK-M-1HBC-3-2
FSK-M-1HBC-3-3
FSK-M-1HBC-3-4
FSK-M-1HBC-4-2
FSK-M-1HBC-4-3
FSK-M-1HBC-4-4
FSK-M-1HBC-497-1
FSK-M-1HBC-497-2
FSK-M-1HBC-498-1
FSK-M-1HBC-498-2
FSK-M-1HBC-498-6
FSK-M-2HBC-3-2
FSK-M-2HBC-3-3

OJBD-217-1
1CCB-45-4
2CCB-45-4

1HBC-4-1
1HBC-4-5
1HBC-497-3
1HBC-498-3
2HBC-3-1
2HBC-3-4
2HBC-4-1
2HBC-4-4
2HBC-497-3 ✓
2HBC-498-3

CHANGE SHEET

PROCEDURE: FIC 5.100

REV NO: 1

Field Procedure

FIC 5.100

is changed as follows:

Add to Attachment C page 6

"FSK-MPY-170"

Ron Wade
7.21.82

CONTROLLED

QUALITY RELATED

Bechtel Power Corporation

Field Instruction

FIC - 5.100

Rev. 1

Excavation Permit System

TO: All Field Engineers and Construction Superintendents

1.0 Purpose

To provide instructions for the proper application, approval, and use of the Excavation Permit. The Permit is intended to prevent disturbance of foundation subgrade for structures, maintain the integrity of compacted backfill, protect existing buried installations, and therefore, the health and safety of personnel, and to provide notification to affected parties of planned work.

2.0 Scope

The Excavation Permit as delineated in this Field Instruction is required for all excavations in both "Q" and Non-Q soil areas. Tunneling as required for underpinning of the Auxiliary Building and excavation and tunneling associated with underpinning of the Service Water Pump Structure (SWPS) and rebedding or replacing the adjacent Service Water Piping, is not included. These excavations are covered by the design documents for these activities.

3.0 References

3.1 Specification 7220-C-211Q - Technical Specification for Bechtel.

3.2 FIC - 1.000 - Q-Listed Soils Placement Job Responsibilities Matrix.

3.3 EDPI 2.14.7 - On-Site Geotechnical Soils Engineer for Midland Backfill and Laboratory Testing

3.4 Design Drawing C-45 - Class I Fill Material Areas

4.0 Definitions

4.1 Excavation - as used in this Field Instruction, excavation is a general term for removal or displacement of soil by any means, to any final dimensions. Excavations covered by this Field Instruction can be categorized as one of the following three types.

4.1.1 Drilled holes - any circular excavation vertically or at an angle into the soil by drilling, driving, or jetting methods.

4.1.2 Pile Driving - as used in this Field Instruction is the mechanical insertion of sheetpiling or load-bearing piles whether of timber, concrete, steel, or composite construction.

4.1.3 Open Pit Excavations - all other excavations not covered by section 4.1.1 or 4.1.2. Methods of excavation include power shovel, draglines, clamshells, hoes, trenching machines, etc.

5.0 Responsibility

5.1 The Project Field Engineer is responsible for the direction and implementation of this Instruction.

5.2 The Lead Civil Field Engineer is responsible for the following:

5.2.1 Maintaining the log and numbering system.

5.2.2 Determining whether additional procedures are required.

5.2.3 Issuing and distributing the permit application only when all appropriate signatures have been obtained.

5.2.4 Maintaining a file of approved permits.

1 5.2.5 Ensuring that Section 5.3.3 has been adhered to by the originator before signing off the Excavation Permit.

5.3 The originator of the excavation permit is responsible for complying with this Instruction in regard to the following:

5.3.1 Filling out the excavation Permit.

5.3.2 Obtaining proper signatures prior to starting the work.

1 5.3.3 Processing a procedure/instruction change sheet in accordance with FIG-1.120 when underground utilities for which he is filling out an Excavation Permit is shown on a drawing that is not listed in Attachment C.

6.0 Method of Processing Permit

6.1 The originator fills in his name, the date, and the following on the attached form:

6.1.1 "Date Work to be Started" - obtained from Supervision. This is a forecast only and is dependent upon complete sign-off of the Permit prior to start of work.

1 6.1.2 "Purpose of Excavation" - the reason for the excavation including drawing references, if applicable, must be stated here. If the drawings referenced show underground utilities and are not listed in Attachment C they should be added to Attachment C of this procedure.

This is to be accomplished by the originator processing a procedure/instruction change sheet in accordance with FIG-1.120. This requirement includes, but is not limited to all new designs for underground utilities whether issued by Project Engineering or the field.

The work item which is to be placed within the excavation is to be noted on the Excavation Permit under this section.

6.1.3 "Location and Limits of Excavation" - this description shall give the limits of excavation in terms of yard coordinates. Depth shall also be specified. A sketch will be used if a written description cannot be made clear. Any structures or known utilities in the proximity of the proposed excavation shall be noted. Variations in these limits are per section 7.3.

6.1.4 "Method of Excavation" - such as power shovel, dragline, clamshell, hoe, trenching machine, auger drilling, rotary drilling, jetting, etc. If sheetpiling or any other method of slope control is to be utilized, it should be noted here.

6.1.5 "Q-List" - Yes or No. This refers to the soil. Civil design drawing C-45 should be consulted for limits of Q-listed soil. If any portion of the excavation falls within the limits of the Q-listed soil, this will be marked "Yes".

6.1.6 If the excavation is a drilled hole, the back page of of the Permit shall be completed.

6.2 The form is then routed by the originator for signatures by Supervision, Field Engineering, and the Onsite Geotecnnical Soils Engineer, as noted on the Permit.

6.3 As noted on the form, the signatures by Bechtel Supervision, (i.e. Superintendents) and Bechtel Field Engineering signify a review of existing underground installations and appropriate action taken to protect them. Any structures or utilities which will be encountered within the confines of the excavation or in the proximity of the excavation will be noted and initialed under the "Remarks" section and the appropriate drawing numbers noted therein. Any appropriate action to be taken should be noted under the "Remarks" section also (attach additonal sheets if necessary). The list of drawings in Attachment C shall be utilized by each Discipline Field Engineer in this sign-off process.

6.4 It is the responsibility of the Lead Civil Field Engineer before he signs to review for the need of procedures. These may be beyond design requirements. Of particular concern is deep drilled holes by Subcontractors. Also, the Lead Civil Field Engineer is to ensure that Sections 5.3.3 and 6.1.2 concerning updating Attachment C have been adhered to by the orginator before signing off the Excavation Permit.

6.5 The OGSE determines the influence of the proposed work on adjacent structures or utilities and whether proposed action to be taken is adequate.

6.6 The sign-off by CPCo Construction is for verification that the excavation and all work associated with the excavation through completion of backfill is within the scope authorized by the NRC.

6.7 When the Q-listed section is checked yes, a signature by MPQAD is required. This sign-off indicates an awareness of work and that appropriate plans to provide QA/QC coverage will be available.

6.8 After all signatures have been obtained, copies must be routed as noted by the originator prior to start of work.

6.9 All excavations and backfill are monitored by the Onsite Geotechnical Soils Engineer to verify that work is performed in accordance with the approved permit and References 3.1 through 3.3.

7.0 Additional Requirements

7.1 The Lead Civil Field Engineer or his designee shall maintain a log (see Attachment B), a corresponding permit file, and unique numbering system for all approved excavation permits.

7.2 Structure foundations and exposed utilities shall be protected from the effects of frost while an excavation remains open.

7.3 Variations in excavation limits and construction methods must be approved by the Onsite Geotechnical Soils Engineer. Such approvals are documented by the Onsite Geotechnical Soils Engineer in his daily report.

7.4 The Onsite Geotechnical Soils Engineer, Lead Civil Field Engineer or designee, and MPQAD (Civil Section) will be notified:

7.4.1 If during open-pit excavation, an unidentified (not listed in remarks section on form) permanent utility is encountered.

7.4.2 If during drilling or pile-driving operations any obstruction is encountered.

Concurrence to proceed or other disposition will be documented on a Field Engineer's report form, signed by Onsite Geotechnical Soils Engineer, Lead Civil Field Engineer or designee, and MPQAD (Civil Section).

Prepared By: Paul Rogers Date 6/18/82

Reviewed by: J.J. Card 6-18-82

PFE _____ Date 6/29/82

PFQCE _____ Date 6/22/82

PQAE _____ (verbal) Date 6/23/82

MPQAD _____ Date 6/24/82

Approved by:

Consumers Power Company _____ Date 6/24/82

Site Manager _____ Date 6/24/82

Bechtel Power Corporation
Job 7220 - Midland Nuclear Power Plant
Excavation Permit
Permit # _____
(To be completed prior to Start of Work)

Originator: _____ Date: _____

Date Work to be Started: _____

Purpose of Excavation: _____

_____

Location and Limits of Excavation: _____

_____

_____

Metnod of Excavation: _____

Q-List: YES _____ NO _____

NOTE: The back of the excavation permit must be completed for drilled holes only.

Signatures below signify review of existing underground and appropriate action taken to protect existing installation.

	Bechtel Supervision	Bechtel Field Engineering
Civil	_____	_____
Mechanical	_____	_____
Electrical	_____	_____
Electrical (Security Systems)	_____	_____
Survey	_____	_____

Remarks or Special Instructions: _____

_____

_____

_____

Onsite Geotechnital Soils Engineer _____ Date _____

CPCo Construction _____ Date _____

MPQAD (Q-only) _____ Date _____

cc: Lead Civil QC Engineer (Q-only)
MPQAD Section Head (Q-only)
Onsite Geotechnical Soils Engineer
CPCo Construction
Lead Civil Field Engineer

D-126-11

Excavation Permit

(To be completed prior to start of work)

NOTE: This back page must be completed for drilled holes only. See Page 1 for general information.

Method of Advancing Hole: _____

Method of Stabilizing Hole: _____

Method of Backfilling the Hole: _____

Time restraints to backfill (or install equipment) after drilling is completed. _____

Specific steps to be taken if an obstruction is encountered _____

NOTE: If an unaccountable loss of drilling fluid (water, bentonite slurry, revert, etc.) occurs during drilling, all work on that hole shall stop and the Onsite Geotechnical Soils Engineer and Project Field Engineer are to be notified immediately.

Excavation Permit Log

Excavation Permit #	Originator	Date By Originator	Purpose	Date Approved Copy Received

List of Reference Drawings For Underground Utilities

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E-500, Sheet 4B
E-500, Sheet 4C
E-500, Sheet 4D
E-500, Sheet 5A
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E-500, Sheet 12
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List of Reference Drawings For Underground Utilities

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List of Reference Drawings For Underground Utilities

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List of Reference Drawings For Underground Utilities

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FSK-MPT-2-2
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FSK-MPT-2-44, Sheet 2
FSK-SP-561, Sheet 3
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FSK-M-2HBC-498-2
FSK-M-0CCC-1-1
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FSK-M-1HBC-498-6
FSK-M-2HBC-3-2
FSK-M-2HBC-3-3

PROFESSIONAL RESUME OF WALTER R BIRD (PE)

SUMMARY OF CAPABILITIES

Broad engineering experience in operations, design quality assurance, and project management of design and construction of complex energy and research facilities. Skilled in the development and implementation of Quality Management Systems. Functional engineering abilities in materials, manufacturing and joining processes, machine design, facilities design, standards writing, and inspection and test specifications. Experienced Manager of large multi-disciplined engineering and quality assurance organizations.

PROFESSIONAL POSITIONS

April 1980 to Present

Midland Project Quality Assurance Department Manager - Midland Nuclear Project, Consumers Power Company, Jackson, Michigan.

Manage the Quality Assurance functions for the Midland Project. The Department consists of both the Architectural Engineer and Constructor's QA Personnel and Consumers Power personnel, and it serves both organizations. The Department has jurisdictional responsibility for design, procurement, construction and preoperational and hot functional testing.

May 1977 to April 1980

Quality Engineering Section Head - Midland Nuclear Project, Consumers Power Company, Jackson, Michigan.

Manage the Quality Engineering Section responsible for all safety-related equipment and construction activities for the 3.2 billion dollar Midland Nuclear Project. This Section consisting of Mechanical, Electrical, Civil and Nondestructive Examination Engineering Groups establishes the Quality Assurance Program to 10CFR50 and National Standards and assures the architect-engineer, constructors and equipment suppliers maintain equivalent quality programs. Reviews and audits their drawings, calculations, construction procedures, procurement documents and other engineering documents to assure compliance to the QA Program commitments. In addition, the Section is responsible for inspection planning for Consumers Power Inspection Section and certification of the Department's NDE personnel.

January 1974 to May 1977

Quality Engineering Branch Manager, Idaho National Engineering Laboratory Idaho Falls, Idaho.

Manage the Quality Engineering Branch which consists of three QE Sections and one Nondestructive Examination (NDE) Section. The Branch had total company responsibility for: 1) Design Quality, 2) Quality planning for procurement and installation, and 3) testing and qualification of designs, components and processes. The NDE Section provides training and certification of examination personnel, develops new NDE techniques and procedures and administers several major research projects. These include development of an automated computer controlled ultrasonic system to examine thick stainless steel welds and a feasibility program to apply acoustic emission to reactor systems for real time inservice inspection. A total of 22 Engineers up through PhD level were employed in this Branch. In 1976 the assignment of LOFT Quality Program Manager (QPM) was assumed. This additional responsibility added a large section of inspection personnel to the Branch. Specific new responsibilities included establishment of the overall quality policy and program for the facility, operations and experiments, and providing quality verification of the readiness of the facility to conduct each test.

October 1972 to January 1974

SLSF Design Section Supervisor, Idaho National Engineering Laboratory, Idaho Falls, Idaho.

Administrative and technical supervision of up to 26 Engineers. In this position, I approved design analysis, design documentation and procurement packages for the Sodium Loop Safety Facility (SLSF). This design consisted of a completely self contained helium-cooled sodium system which is located within a pressurized water reactor. I had direct design responsibility for the fill, storage and remelt (FS&R) System. This System was used to purify sodium, heat the test loop, bring the loop to vacuum conditions and fill the loop with sodium. The design included the architectural engineering for radiation shielding, liquid metal fire mitigation, ventilation system and radiation and fire detection systems.

July 1971 to October 1972

Project Engineer, National Reactor Testing Station, Idaho Falls, Idaho.

Engineering Division Project Manager for Power Burst Facility (PBF) modifications. Major modification include providing PBF with the capability of: LOCA testing of both BWR and PWR experiments with top spray and bottom flood emergency cooling water, BWR Power-Coolant Mismatch (PCM) two phase flow testing, and LOCA testing with blowdown. These were major system designs for a nuclear facility that complied with ASME Section III and RDT Standards.

January 1971 to July 1971

Mechanical Design, Section Supervisor, National Reactor Testing Station, Idaho Falls, Idaho.

Responsible for the mechanical engineering design section at the Test Reactor Area. Section provided plant engineering support for the "Engineering" and "Advanced Test Reactors," and experimental design support for Navy Sponsors and Aerojet Scientific Divisions. Provided system engineering for tasks assigned to the main Engineering Division for detailed design. The work scope is the same as in the following section. Plant engineering included all phases of support for both reactor primary and secondary systems. Reviewed incident reports for recommendation of engineering action.

March 1970 to January 1971

Project Manager for Experimental Systems, National Reactor Testing Station, Idaho Falls, Idaho

Prime responsibility was to insure that engineering division work for the sponsors (KAPL, BABL, and Battelle Northwest) was completed satisfactorily. In six months, turned around a bad situation to where sponsors had confidence in engineering work and were using division services. Specific job functions included: 1) scoping engineering tasks, 2) providing design criteria and cost estimates, 3) giving technical direction to the Engineering Division Branches, 4) review of engineering work, 5) providing sponsors with technical and fiscal status, 6) insuring tasks were completed on time within resources. Specific tasks included a variety of experiments for both loop and capsule facilities, design of a large multihole capsule facility for ATR, a new experimental lead pressurizing system for ETR, a major modification to a pneumatic rabbit facility and an engineering review of a new BABL "large" inpile tube and loop design for the Advanced Test Reactor. Engineering services to the sponsors includes thermal and stress analysis, mechanical and electrical design, metallurgical support and drafting.

August 1969 to March 1970

Design Engineer Section Supervisor, National Reactor Testing Station, Idaho Falls, Idaho

Responsible for design work of mechanical engineering group. Majority of work was plant engineering support for the test reactors and the design of specialized handling tools to replace the Engineering Test Reactor beryllium reflector. Some work was performed in the design of the Semi-scale Test Facility for blowdown tests.

May 1967 to August 1969

Design Engineer, National Reactor Testing Station, Idaho Falls, Idaho.

Mechanical Design Engineer and Project Engineer for MTR beryllium changeout. Responsible for designing required handling tools and writing the detailed procedures required to replace the Material Test Reactor's beryllium reflector, skirt plates, and miscellaneous internals in preparation for the "Phoenix Core Experiment." Provide training to

operating personnel in the use of the tools and procedure. Coordinated engineering and quality assurance activities during the changeout and provided engineering support to solve problems as they developed.

Responsible for general plant engineering and mechanical design engineering mostly in support of the Advanced Test Reactor. Made procurement trips to expedite delivery of primary system valves. Provided design review and liaison engineering for the ATR Gas Cooled Loop cask and experiment handling systems.

September 1962 to April 1967

Naval Officer, United States Navy.

All assignments were shipboard engineering billets including damage control assistant and repair officer aboard two destroyers, and Boiler Officer aboard the attack aircraft carrier Oriskany. Qualified Engineering Officer of the Watch. Navy duty provided broad experience in steam propulsion machinery and auxiliary equipment. Extensive shipyard experience gained as the two destroyers and the carrier underwent FRAM or a major overhaul during assignments.

EDUCATIONAL ACHIEVEMENTS

Bachelor of Science - Mechanical Engineering, 1962, University of Idaho

Master of Science - Nuclear Engineering, 1972, University of Idaho

UTEC Basic Ultrasonics School, 1976

Six Graduate Level credits in Quality Assurance Courses, University of Idaho

Ten Weeks Damage Control Assistant Course, US Navy, Philadelphia Naval Shipyard

PROFESSIONAL REGISTRATION

Professional Engineer (Mechanical), State of Idaho, 1975, Certificate No 2803

PERSONAL DATA

Married - Three Children

Currently in twentieth year of US Naval Reserve holding rank of Commander. Commanding Officer of a Naval Reserve Research Unit.

Active in Boy Scouts of America.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	)	'82 NOV 17 P1:05
	)	Docket Nos. 50-329-OM
CONSUMERS POWER COMPANY	)	50-330-OM
	)	50-329-OL
(Midland Plant, Units 1 and 2)	)	50-330-OL

CERTIFICATE OF SERVICE

I, Philip P. Steptoe, one of the attorneys for Consumers Power Company, hereby certify that copies of the following testimony were served upon all persons shown in the attached service list by deposit in the United States mail, first class, except where marked with an asterisk, in which case service was by hand, this 15th day of November, 1982.

Testimony of Ralph B. Peck, concerning the Diesel Generator Building

Testimony of Karl Wiedner, concerning the Diesel Generator Building

Testimony of Dr. Mete Sozen, concerning the effect on structural strength of cracks in the walls of the Diesel Generator Building

Testimony of Dr. W. Gene Corley, concerning the Midland concrete crack repair program

Testimony of Dr. W. Gene Corley, Appendix B, "Limit Analysis of Service Water Pump Structure", to be attached to Dr. Corley's testimony concerning cracking in the Service Water Pump Structure, filed October 20, 1982.

D503

Testimony of W. Bird and R. Wheeler, concerning NCR #MO1-4-2-008 (Rev. 1) (February 25, 1982), NCR #MO1-9-2-038 (March 8, 1982), NCR #MO1-9-2-051 (April 21, 1982), Bechtel NCR #4199 (including stop work order FSW-22), and Bechtel NCR #4245

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