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Company

QUALITY ASSURANCE  
PROGRAM

PLANT: Midland UNIT 1 &

SUBJECT OF AUDIT: Soils Placement  
and Inspection

QA SUBJ FILE

REPORT NO F-77-21

I. AUDIT SCOPE

The purpose of this audit is to verify that soils placement and inspection are being accomplished in accordance with Bechtel's procedures, specifications and codes.

II. AUDITOR

G. B. Johnson, CPCo Field Quality Assurance Engineer (Civil)

III. PERSONNEL CONTACTED

- \*\*Ben Cheek, Bechtel Lead Civil Quality Control Engineer
- \*Daryle Osborn, Bechtel Quality Control Engineer (Civil)

**RECEIVED**

JUL 06 1977

BECHTEL POWER CORP  
JOB 7220

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IV. SUMMARY OF AUDIT

- A. A Pre-Audit Conference was held on May 23, 1977 at Daryle Osborn's desk with those in attendance as noted in Sections II and III above. The audit scope was the only item discussed.
- B. The audit was performed on the placement and inspection of zone 2 material in the plant area South of the Turbine Building at elevations 620' - 622'. The backfilling operation was centered around plant coordinates S 5070 and E 36Q. The attached checklist was used.
- C. The soils placement and inspection seemed adequate except as described in Section V of this report.
- D. Future audits will be run the same, when scheduled.
- E. A Post-Audit Conference was held on June 16, 1977 in Ben Cheek's office with those in attendance as noted in Sections II and III above. The Post-Audit Conference consisted of telling Ben Cheek and Daryle Osborn that the results of this audit were adequate except for Findings #1 & #2 in Section

| ACT. | INFO. | ROUTE     |
|------|-------|-----------|
|      |       | QAE       |
|      |       | CIVIL (1) |
|      |       | CIVIL (2) |
|      |       | TECH      |
|      |       | PLNG      |
|      |       | LECT.     |
|      |       | AST.      |
|      |       | ECY       |
|      |       | FILE NO.  |

V. CLOSED OUT FINDINGS

Finding #1

Bechtel Specification 7220-C-210, Rev. 4, Section 12.6.1, states in part:

The water content during compaction shall not be more than 2 percentage points below optimum moisture content and shall not be more than 2 percentage points above optimum moisture content.

SB125560

- \*Attended Pre-Audit Conference and Post-Audit Conference
- \*\*Attended Post Audit Conference

BY Gary B. Johnson

DATE 5 July 77

SHEET 1 OF 3

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V. CLOSED OUT  
FINDINGS

Finding #1 (Contd)

Contrary to These Requirements:

Backfill was placed on a lift which was determined to be greater than 2% below optimum moisture content (Plant Backfill Test #1352, optimum 15.2%, actual 12.8%). When questioned, the Foreman directing the soils work stated that he would continue backfilling since satisfactory compaction had been obtained.

Recommended Corrective Action:

1. The Foreman directing the soils work should be instructed as to the required moisture content limits.
2. Bechtel QC should determine if a re-test had been accomplished on the lift in question. If a re-test had not been accomplished it will be necessary to obtain one. If the affected material is found to be nonconforming, an evaluation will have to be made as to the acceptability of the in-place material by Project Engineering.

Corrective Action Taken:

1. Bechtel QC informed the foreman directing the soils work of the required moisture content limits and what to do if a failing test occurs.
2. A retest was taken in the area and the retest passed (Plant Backfill Test 1414).

Finding #2

Bechtel Specification C-208, Rev. 10, Table 9-1, states in part:

Field Densities and Moisture Contents will be taken at the frequency of one test per every 500 cubic yards of fill.

Contrary to These Requirements:

During the audit it was discovered that the Foreman directing the soils work believed that the required frequency for testing of field density and moisture content was one test per 1000 cubic yards of fill.

Recommended Corrective Action:

1. The foreman directing the soils work should be instructed as to the correct test frequency requirements.

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V. CLOSED OUT  
FINDINGS

Finding #2 (Contd)

Recommended Corrective Action: (Contd)

2. Bechtel QC should determine if the 1/500 cy test frequency has been exceeded. If the test frequency has been exceeded, an evaluation will have to be made as to the acceptability of the in-place material by Project Engineering.

Corrective Action Taken:

1. Bechtel QC informed the foreman directing the soils work of the correct test frequency requirements.
2. Bechtel QC made an evaluation concerning the frequency of testing in the affected area. It was determined that between 5/13/77 and 6/17/77, 18,200 cy of random backfill was placed South and East of the Turbine Building. 57 tests were taken on this material which results in an overall test frequency of 320 cy/test. The majority of this 18,200 cy was placed in a NON-Q area.

VI. NONCONFORMANCE REPORTS

None

GCI - I.R. weekly plan -

1. USTesting man is at the work site 100% of time
2. Foreman keeps track of yardage
  - Test frequencies are obviously OK.
  - Into store by foreman in error - he's been here for three years and has directed soils operation
3. Failing tests always noted on reports
4. If test fails work is moved to another area ~~to~~ but continues until failing test is resolved
5. BC has initiated a failing test log - maintained by UST. show close out of failing tests.
6. Audit covered a full week.