

QUALITY ASSURANCE PROGRAM - MIDLAND FACILITY

By memorandum of November 26, 1973, the Atomic Safety and Licensing Appeals Board pointed out its expressed concerns regarding quality assurance during the time the Midland case was under its jurisdiction. The memorandum noted the deficiencies in cadwelding identified during an inspection of November 6-8, 1973, which resulted in the licensee suspending cadwelding operations. The Board stated that the question remains unresolved whether the same or equally serious QA shortcomings may be infecting other aspects of the construction work and questioned whether any construction activity can be allowed to proceed until the unresolved question is settled.

Since the issuance of the construction permit in December 1972 and, particularly, since the resumption of construction in June 1973, Midland has been under an accelerated inspection program by RO. For plants in early stages of construction the RO program calls for four inspections annually. Since January 1973, eleven inspections have been conducted relative to Midland - six of these were site inspections. This accelerated program is evidence of the RO concern, in concert with the ALAB, of the quality assurance effort for Midland.

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Of nine inspections performed in 1973 prior to the inspection which revealed the cadwelding deficiencies, one revealed violations of requirements. These violations related primarily to documentation requirements in the Bechtel Corporation manuals.

Thorough inspections have been performed of the implemented QA program for such site activities as concrete batch plant operation, equipment calibration, and placement of concrete in post tensioning galleries without identification of violations. These inspections did reveal some inconsistencies between the QA manual and certain requirements of the Quality Assurance Criteria of Appendix B to 10 CFR 50. However, with one exception, these inconsistencies have been satisfactorily resolved. A matter of concern to the ALAB was the QA organizational structure. The licensee has corrective action underway concerning this matter.

RO is concerned about the specific deficiencies in the cadwelding program and the QA deficiencies the cadwelding program indicates. However, because of the recent history of adequate QA implementation as revealed by inspections prior to the November 6-8 inspection, RO has no reason to believe, at this time, that the deficiencies in the cadweld program necessarily

are indicative that the QA program is defective on a large scale. The RO Region III Director has a meeting scheduled with the president of the utility on December 5 to emphasize our concern. We also have planned a continuation of the intensive inspection program to monitor licensee QA performance as each major aspect of construction is initiated.

If this inspection program reveals that the licensee QA program has serious shortcomings or is ineffective, prompt and appropriate enforcement action will be taken.

Attachments, as listed, give additional information on Midland.

1. Attachment A - Summary of information related to ALAB concerns, licensee response to ALAB orders, pertinent inspection findings, and pertinent references.
2. Attachment B - Table of inspection history since issuance of Construction Permit.
3. Attachment C - Summary information concerning violations detected at Midland.
4. Attachment D - Sequence of events concerning cadweld problem.

5. Attachment E - Listing of activities in progress at Midland.
6. Attachment F - Problem history and proposed program for
followup of Midland construction activities.

ATTACHMENT A

ATOMIC SAFETY AND LICENSING APPEALS BOARD (AS&LAB)

A. ALAB-106 - Dated March 26, 1973

1. ALAB expresses opinion that view of scope of QA program, as expressed in initial decision, was too narrow.
2. States that overall QA program meets Part 50, Appendix B.
3. Expresses concern re: evidence (inspection records) which may indicate insufficient QA program implementation.
4. Sites four violations relative to concrete placement. (Concludes improperly trained construction personnel on the part of A-E.)
5. Concludes that neither the applicant nor the A-E have provided reasonable assurance that QA program will be properly implemented.
6. Requires:
 - a. Report on QA action to assure proper QA.
 - b. Quarterly reports of QA personnel staffing.
 - c. Qualifications of QA personnel.
 - d. Monthly nonconformance reports.

B. ALAB-132 - Dated June 28, 1973

Rehash of above in answer to intervenors. Also discusses: (1) work to assure that site and materials are adequate (following long-term storage of materials and mothballing of completed construction work) and (2) requests that staff make inspection to determine adequacy of applicant's QA program at time of resumption of construction.

C. ALAB-147 - Dated September 18, 1973

1. Raises issue identified in RO Inspection Report No. 050-329/73-05 and No. 050-330/73-05, dated July 16, 1973, regarding Bechtel QC people reporting to construction superintendent. Requires Staff to obtain prompt revision of Bechtel QA program. Requirement involves stay of intervenor's motion pending ten-day corrective action on the part of Staff, i.e., to effect change in Bechtel organization.

2. Staff answer, dated September 28, 1973, rejects AS&LAB position and petitions board to reconsider Part IV of ALAB-147 and to determine that Bechtel QA program meets 10 CFR Part 50, Appendix B, Criterion I (discussed in Paragraph 1, above). Licensee's position and answer to ALAB-147 was that 10 CFR Part 50, Appendix B, Criterion I, was being met.

D. ALAB-152 - Dated October 5, 1973

1. Denies staff petition dated September 28, 1973.
2. Modifies ALAB-147 as follows: "Within 45 days of the entry of this order, the Regulatory Staff is to:"
 - a. Determine the extent to which, as presently constituted, the Bechtel QA organization is in conformity with the requirements of Section I of Appendix B to 10 CFR Part 50, as construed in ALAB-147 and herein.
 - b. Require such revision of that organization, if any, as may be necessary to effect promptly such conformity.
 - c. Require such revision of the relevant Bechtel organizational charts and manuals, as may be necessary, to ensure that they fully and accurately delineate the authority and duties of all Bechtel personnel and organizations performing QA functions.

E. Licensee Response

1. ALAB-106

The licensee's response to ALAB-106 is dated May 25, 1973, and appears to provide adequate relativity to the board's expressions of concern.

2. ALAB-132

No response required of licensee but requires inspection at site by RO:III inspectors. The required RO:III inspection was performed on June 26 - 28, 1973. (RO Inspection Report No. 050-329/73-05 and No. 050-330/73-05, dated July 16, 1973.) Draft response from staff: Draft, Bryan, dated July 13, 1973, covering inspection results.

3. ALAB-147

Licensee (and staff) response to ALAB-147 was that Bechtel's QA organization met Part 50, Appendix B, requirements. RO:III response to RO:HQ, Vetter to Thornburg, dated October 5, 1973.

4. ALAB-152

No official, written response from staff or licensee as of this date. However, the licensee has verbally informed RO:III that required Bechtel QC organization changes will be made and Bechtel has submitted (to RO:HQ) draft changes in QC organization which appear to satisfy concern expressed by board in ALAB orders 147 and 152.

F. Inspection Findings

1. ALAB-106

Inspection findings (review of Bechtel QA manuals) identified concern and a need for clarification of: (1) the Bechtel QA manager reporting level, and (2) the freedom and independence of Bechtel site QC personnel. (RO Inspection Report No. 050-329/73-01 and No. 050-330/73-01)

2. ALAB-132

Inspection findings indicated a further need for clarification of matters discussed in 1., above. (RO Inspection Report No. 050-329/73-05 and No. 050-330/73-05)

3. ALAB-147

Further review of Bechtel's QA Program, including changes in the Bechtel organization chart, led to a conclusion on the part of RO:III that the Bechtel QC organization adequately satisfied 10 CFR Part 50, Appendix B, Criterion I. (RO Inspection Report No. 050-329/73-06 and No. 050-330/73-06)

4. ALAB-152

Inspection to confirm licensee-Bechtel response to ALAB-152 has not been performed to date.

MIDLAND PLANT INSPECTION HISTORY
(Dockets No. 50-329 and No. 50-330)

<u>Inspection Report No.</u>	<u>Date of Inspection</u>	<u>Type of Inspection</u>	<u>General Inspection Findings</u>	<u>Level of Mtg. Attendees</u>
73-01	2/23/73	Corporate Management Meeting	CP QA organization for Midland being revised	Vice President Project Manager QA Administrator
73-02	4/17/73	Corporate Management Meeting	Bechtel QA organization not adequately independent for Midland	Vice President Project Manager QA Administrator
73-03	5/24-25/73	Licensee Vendor Audit Surveillance B&W (Barberton)	Work for Midland restarted, 50.55(a) discussed, audit OK	B&W: QA Manager & Project Director CP: Staff Engineer
73-04	6/14-15/73	Licensee Vendor Audit Surveillance B&W (Mt. Vernon)	Follow-up action by CP noted, audit OK	B&W: QA Manager
73-05	6/26-28/73	Site - restart of construction	Site cleanup and preliminary inspection of stored materials and components in progress. Concrete structures and stored materials as stated.	Project Manager QA Administrator
73-06	7/23-26/73 and 8/8-10/73	Review of QA Program	CP QAM lacks, or is inconsistent with, certain requirements of Appendix B. Bechtel QA site organization "resolved."	Project Manager QA Administrator Field QA Engineer
73-07	9/5-7/73	Restart of construction and concrete activities	Batch plant and concrete placement OK. Stored material inspection continuing. CP QAM revisions remain open.	Project Manager QA Administrator

<u>Inspection Report No.</u>	<u>Date of Inspection</u>	<u>Type of Inspection</u>	<u>General Inspection Findings</u>	<u>Level of Mtg. Attendees</u>
73-08	9/10-11/73	Audit of A-E (Bechtel) QA Program	Apparent violations identified relative to procurement and design activities (see Attachment C).	Vice President QA Director QA Administrator
73-09	10/10-11/73	CP QA Manual Review	CP QA organization structure revised, most of significant deficiencies in CP QAM have been corrected.	QA Director Project Manager
73-10*		Construction activities.	Apparent violations identified relative to Cadwelding activities (see Attachment D). No "bad" concrete or welds observed regarding general allegations. Preparation for liner plate restoration and requalification in progress. Bullock Creek relocation completed.	Project Superintendent QA Engineer
73-11*	11/15/73 and 11/20-21/73	Cadwelding activities.	Cadweld reinspection (Unit 2) appeared to be adequate. Overall inspection plan for restart of Cadwelding, work instructions, and inspection procedures not completed. Review and approval of reinspection records (Unit 2) not completed. Documentation of problem analysis and corrective action not completed.	Vice President QA Director Project Manager Project QA Supervisor

*RO Inspection Report not completed.

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ATTACHMENT C

Violations to Date

1. Date of Inspection: September 29 and 30, 1970 and
October], 1970

CO Report No. 50-329/70-6
CO Report No. 50-330/70-6

Nonconformance Items

- a. Observations of concrete placement activities at the construction site revealed:

- (1) The use of vibrators to move concrete.
- (2) A lack of sufficient vibrator penetration.
- (3) An absence of vibrator action at recommended intervals.

The above items are in disagreement with ACI-301, Paragraph 803.d.

- b. The site testing laboratory was not taking aggregate gradation and organic tests at the frequencies stated in the PSAR.

These nonconformances were brought to the attention of the licensee in a letter dated January]8,]971. An adequate reply was received from the licensee on February 5,]971. Due to cessation of concrete activities these items were not inspected for conformance to the reply until September 5-7,]973 (RO Inspection Report No. 050-329/73-07 and No. 050-330/73-07). The results of this inspection were as follows:

- (1) Concrete Placement Activities Not In Accordance With Applicable Requirements (CO Inspection Reports No. 050-330/70-06, No. 050-329/7]-0] and No. 050-330/73-0])

During the referenced inspection (September]970), the inspector observed improper use of vibrators during concrete placement, i.e., use of vibrators was not in accordance with ACI Standard 30], paragraph 803.d. Subsequent to this inspection, Consumers Power Company (CP) was informed that this matter would remain on followup status until construction work was resumed and further inspection could be made.

During this inspection, activities associated with the use of vibrators during concrete placement were observed. Through discussions with site personnel, review of records, and observation of concrete placement activities in progress, it was determined that the use of vibrators during concrete placement met applicable requirements (ACI-30]). This matter is considered resolved. However, periodic inspection of concrete activities, including use of vibrators, are to be made during subsequent inspections.

(2) Insufficient Frequency of Aggregate Testing (CO Inspection Reports No. 050-329/70-06, No. 050-330/70-06, No. 050-329/7]-0] and No. 050-330/7]-0])

During the referenced inspection (September 1970), it was learned that aggregate gradation and organic tests of sand were not being conducted in accordance with applicable requirements, i.e., test frequencies were less than required by Section 5.]].3 of the Midland Project PSAR. CP was informed that this matter would remain on a followup status until construction work was resumed so that further inspections could be made.

2. Date of Inspection: September 10, 11, 27, 1973

CO Report No. 50-329/73-08
CO Report No. 50-330/73-08

Violations

Certain of the activities at the Bechtel Power Corporation appear to be in violation of AEC regulations and in nonconformance with the Bechtel Corporation Nuclear Quality Assurance Manual or the Bechtel Corporation Procedures Manual for Midland Units No. 1 and No. 2, as identified below, and are considered to be of Category II severity.

- a. 10 CFR Part 50, Appendix B, Criterion II, states, in part, that:
" This program shall be documented by written policies, procedures, and instructions" Criterion XVII of 10 CFR Part 50, Appendix B, states, in part, that: "Consistent with applicable regulatory requirements, the applicant shall establish requirements concerning record retention, such as duration, location, and assigned responsibility."

Contrary to the above, the Bechtel Corporation Nuclear Quality Assurance Manual does not include a requirement for retention of records common to activities affecting quality. Furthermore, other quality assurance program documentation dealing with record retention requirements was unavailable during the course of the inspection.

- b. 10 CFR Part 50, Appendix B, Criterion V, states, in part, that: "Activities affecting quality shall be prescribed by documented instructions, procedures, or drawings of a type appropriate to the circumstances and shall be accomplished in accordance with these instructions, procedures, or drawings."

The Bechtel Power Corporation Internal Procedures Manual for Midland Units No. 1 and No. 2, Section 7.5, titled, "Drawing Control and Stick Files" requires that the current revision of each drawing be maintained in the stick files.

Contrary to the above, current revisions of certain drawings were missing from the stick files.

- c. 10 CFR Part 50, Appendix B, Criterion V, states, in part, that: "Activities affecting quality shall be prescribed by documented instructions, procedures, or drawings of a type appropriate to the circumstances"

Contrary to the above:

- (1) Procedures to prescribe control of interface activities between design groups were not available for review by the inspector at the time of the inspection.
 - (2) Procedures to prescribe control, issuance, and changes to the Bechtel Corporation Internal Procedures Manual for Midland Units No. 1 and No. 2, were not available for review by the inspector during the inspection.
- d. 10 CFR Part 50, Appendix B, Criterion V, states, in part, that: "Activities affecting quality shall be prescribed by documented instructions, procedures, or drawings of a type appropriate to the circumstances and shall be accomplished in accordance with these instructions, procedures, or drawings." The Bechtel Corporation Nuclear Quality Assurance Manual, Section III, Procedure No. 4, specifies the use of Exhibits 3.6A.1, 3.6A.2, and 3.6A.3 for vendor control.

Contrary to the above, quality assurance specifications No. 7220 G-20, No. 7220 G-2], and No. 7220 G-22 were being used to accomplish this activity in the absence of an approved change to the manual authorizing the use of these Specifications.

These violations were brought to the attention of the licensee in a letter and report dated October 24, 1973. A reply was received from the licensee on November 26, 1973, and is currently being reviewed by RO:III.

ATTACHMENT D

CHRONOLOGICAL HISTORY - CADWELDING ISSUE

1. Inspection performed on November 6 - 8, 1973.
2. Findings:
 - a. Cadweld inspection activities were being conducted by personnel who were unable to demonstrate knowledge of applicable acceptance-rejection criteria for completed Cadwelds.
 - b. RO:III inspection personnel identified rejectable Cadwelds which had been previously accepted by site inspection personnel.
 - c. The site procedures, governing the performance of Cadwelding, did not include work performance records sufficient to establish that certain of the quality related requirements were being maintained.
 - d. Neither the scope nor the quality of procedures for performing Cadwelding met Part 50, Appendix B, criteria.
3. During the management interview immediately following the inspection, licensee site representatives were informed by the inspectors that continuation of Cadwelding activities should be based on establishment of appropriate acceptance-rejection criteria.
4. On November 9, 1973, the day after the inspection on November 6 - 8, 1973, and subsequent to a routine inspection debriefing, W. E. Vetter telephoned Mr. W. E. Kessler (Consumers Power Company Midland Project Manager) to discuss the Cadwelding problems. The essential elements of the November 9 telephone conversation between Vetter and Kessler are as follows:
 - a. Mr. Kessler said, in response to Mr. Vetter's expressions of concern, that Cadwelding had been stopped pending the results of a Bechtel Corporation-Consumers Power Company meeting at the site. He added, however, that the results of the meeting had been such as to identify and correct the areas of discrepancy relative to acceptance-rejection of Cadwelds and that, consequently, continuation of Cadwelding appeared to be in order.
 - b. Mr. Vetter stated that the deficiencies associated with Cadwelding appeared to stem from a generic, syndromatic QA/QC program short-coming and that additional Cadwelding should not be performed until: (1) all currently existing Cadwelds had been reinspected by properly qualified inspection personnel and determined to meet quality requirements, and (2) a site inspection by RO:III inspectors established that an acceptable quality program for Cadwelding had been developed and implemented.

Mr. Kessler said, in response to Vetter's statements, that the action specified above would be accomplished and that he would inform Region III when such action would be completed.

5. Subsequent to the above, also on November 9, 1973, J. G. Keppler telephoned Mr. S. H. Howell, Vice President, Consumers Power Company, to discuss this matter and to emphasize the need for Consumers Power reaction to an apparent generic breakdown in the Midland project QA/QC program.
6. To confirm the results of the November 9, 1973, conversation between Messrs. Vetter and Kessler, discussed in Paragraph 4, above, a letter dated November 9, 1973, signed by J. G. Keppler, was sent to Consumers Power Company for the attention of Mr. S. H. Howell.
7. Also, on November 9, 1973, J. G. Keppler telephoned Mr. Myron Cherry, a lawyer representing the "Mapleton Intervenors" (Midland project intervenors) to inform him of the action on the part of both the Consumers Power Company and RO:III. Mr. Cherry was informed because of his expressed interest in learning the results of this specific inspection.
8. Later, on November 10, 1973, the essential elements of the Cadwelding issue, including both the licensee's and the Region III action, were made known to the public in the form of an official AEC press release.
9. On November 13, 1973, a Regulatory Operations "Blue Sheet," covering this matter, was issued in accordance with standard Directorate of Regulatory Operations practice, including standard distribution.
10. In keeping with 4.b., above, the licensee informed RO:III, on November 19, 1973, that the corrective action commitments relative to the cadwelding activities would be completed on November 19, 1973. Consequently, a special inspection was performed at the site by RO:III inspection personnel on November 20-21, 1973. The results of this inspection established that the licensee had effectively requalified all cadwelds in Unit No. 2 (320 welds) and that requalification of welds in Unit No. 1 was in progress. However, the inspection resulted in a conclusion by the inspectors that: (1) cadwelding procedures continued to be inadequate, and (2) the licensee had not dealt with the generic, syndromatic, breakdown in the site QA/QC programs. In view of the foregoing, the licensee agreed with an RO:III position that cadwelding should continue to be an unauthorized activity until further review of corrective action had been completed by RO:III.

ATTACHMENT E

Other Activities in Progress

1. Current work in progress:
 - a. Field welding of liner plate.
 - b. Inspection of cadwelds (Unit]).
 - c. Structural steel supports for rebar.
 - d. Forming for base mat.
2. Work to be scheduled in next month:
 - a. Installation and welding of rebar both units.
 - b. Field welding of liner plate.
 - c. Forming for base mat.
 - d. Installation of anchor bolts for liner plate (144 each unit) and steam generators (96 each unit).
 - e. Grounding of rebar and installation of cathodic protection.
3. No concrete pour is expected until late January or early February.

ATTACHMENT F

PROBLEM HISTORY AND PROPOSED PROGRAM FOR FOLLOWUP

Step 1 - November 9, 1973

Cadwelding activities were terminated pending completion of corrective action program by the licensee.

Step 2 - November 20-21, 1973

Site inspection performed to determine the adequacy of corrective action.

Step 3 - November 21, 1973

Licensee informed that corrective action had been determined to be substantial in some areas but inadequate in others. Licensee also informed that Cadwelding should not be resumed until further site inspection by RO:III establishes that adequate corrective action has been accomplished.

Step 4 - December 5, 1973

Meet with top Consumers Power Company management personnel to discuss problems related to Palisades, Midland and Quanicassee. The thrust of the discussion on Midland will identify: (1) generic QA program problems, (2) discuss courses of corrective action, and (3) discuss enforcement action which would follow in the event of inadequate or untimely corrective action.

Step 5 - Date Unknown

Perform a special site inspection upon notification by licensee that prescribed corrective action, relative to the Cadwelding problem (both specific and syndromatic problems) has been completed.

Step 6 - Date Unknown

Identify the next three phases of Class I construction activity (critical flow path) and perform special site inspections to assure that specific and syndromatic QA/QC problems already related to Cadwelding activities have been adequately resolved.*

*Since the Cadweld problems occurred principally as the result of improper implementation of the QA program (not problems with the QA manual) and relatively little work important to safety is in progress at this time, it is not meaningful to conduct further inspections until such time as additional Class I construction activities become imminent.

Step 7

Initiate enforcement action, as needed, based on results of Steps 4 through 6, above.