



UNITED STATES
NUCLEAR REGULATORY COMMISSION
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
WASHINGTON, D. C. 20555

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March 3, 1983

MEMORANDUM FOR: ACRS Members

FROM: D. C. Fischer, Staff Engineer

DC Fischer

SUBJECT: MIDLAND'S INDEPENDENT DESIGN VERIFICATION

- REFERENCE: (1) J.W. Cook Letter to H.R. Denton and J.G. Keppler, Serial 18879 Dated 10/5/82
- (2) J.W. Cook Letter to H.R. Denton and J.G. Keppler, Serial 19750 Dated 12/3/82
- (3) USNRC Letters to CPCO Dated 2/22/83 and 2/23/83 Re Tera Corporation's Project Quality Assurance Plan and Engineering Program Plan for the Midland Independent Design and Construction Verification Program

References (1) and (2) describe Consumers Power Company's Independent Review Program. This Program includes Midland's Independent Design and Construction Verification Program to be performed by the Tera Corporation (see page 3 of Attachment I). A detailed description of the Tera Corporation Engineering Program Plan and Project Quality Assurance Plan is contained in Reference (3). Copies of reference (3) have been sent to the Midland Plant Subcommittee members and consultants. If any other members are interested in receiving these documents, please let me know (202) 634-1413.

Attachment:

Midland Plant Units 1 & 2
QA/QC Project Status Report
from the February Full Committee
meeting

cc: R. F. Fraley
M. W. Libarkin
J. C. McKinley
G. R. Quittschreiber

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MIDLAND PLANT UNITS 1 & 2
QUALITY ASSURANCE/QUALITY CONTROL
PROJECT STATUS REPORT
274TH ACRS MEETING, FEBRUARY 10, 1983

Purpose

During the "future ACRS activities" portions of the 274th ACRS meeting, the Committee will discuss and perhaps plan some of its future activities related to Midland QA/QC. Dr. Okrent will solicit the Committee's views on the following items.

1. Provide the NRC Staff with confirmation of the Committee's request as stated in the June 8, 1982 ACRS Interim Report on Midland. In that letter report, the Committee deferred its recommendation regarding operation of Midland at full power until it "had the opportunity to review the plan for an audit of plant quality and ..." The Staff should complete its review and approval of the CPCo plan for an independent design verification and audit at Midland by March. The NRC Staff wants to confirm that it is this plan that the Committee wants to review and not the results of the audits.
2. Assess the adequacy of the NRC Region III report on design and construction problems at Midland for the period from start of construction through June 30, 1982. This report was written as partial response to the Committee's request to "receive a report which discusses design and construction problems, their disposition, and the overall effectiveness of the effort to assure appropriate quality." If the Committee believes it needs further information, the needed information should be clearly identified.
3. Determine if the Committee should "aggressively pursue a leadership role in holding Consumers Power Company accountable for public safety" as requested by Ms. Billie Garde of the Government Accountability Project (GAP). Ms Garde has urged the Committee "to consider seriously the current events at Midland, and to take decisive action through the ACRS meeting process to pull together the fragmented Midland story."

} a recent proposal is to have the NRC Staff brief the full Committee on the Independent Design and Construction Verification Program (IDCR) in April.

History

The ACRS reviewed Midland for a CP license in June 1970. In response to requests for additional information from the AS&LB the ACRS wrote an additional Supplemental Report on Midland Plant Units 1 & 2, dated November 18, 1976. On April 29, 1982 an ACRS Ad Hoc Subcommittee met to discuss the remedial actions for soils-related structural settlement problems at the Midland site. The Ad Hoc Subcommittee's recommendations were accepted by the full ACRS during the May Full Committee meeting and promulgated to the Staff by a May 14, 1982 memorandum from R. Fraley to the EDO (Attachment 1). While the April 29, 1982 Ad Hoc Subcommittee

meeting focused on the remedy rather than the cause of the soils problems, background documents on the cause of the soils problems were made available to the ACRS prior to the June 1982 Full Committee meeting. Midland Plant Subcommittee meetings were held on May 20-21, 1982 and June 2, 1982. These meetings did address the quality of design and construction at Midland. During the June Full Committee meeting the Committee reviewed the application of CPCo for a license to operate the Midland Plants Units 1 & 2. The resulting ACRS Interim Report is included as Attachment II. QA hearings for Midland are now expected to start on April 12, 1983.

Region III Report on Midland Design and Construction Problems

In my December 9, 1982 memorandum to all ACRS Members (Attachment III) I described and commented on Region III's report on Midland's construction QA deficiencies through June 30, 1982. I would like to add a few comments to those that I have already made. Not only has the licensee continued to experience problems in the implementation of quality in construction but many of the noncompliances identified are of a recurring nature. I also have convinced myself that many QA/QC deficiencies at Midland identified before June 30, 1982 have not been included in the Region III report. A thorough review of mail received by the ACRS on the Midland docket between April 1981 and June 1982 bears this out.

Examples include:

1. The AFW pump turbine steam admission valve interlock system was found to block steam from both steam generators to the AFW turbine and prevent proper operation of the AFW system (MCAR-58),
2. Non-Q HVAC systems were found to be providing required cooling to safety related equipment in the auxiliary building (MCAR-59), and,
3. An error was found in the ECCAS wiring when comparing the drawing to the hardware's condition (50.55e report).

While the nonconformances identified in the Region III report are numerous, a significant number of them represent 'paper' problems and not physical plant construction nonconformances. As a result of these and previously identified shortcomings of the Region III report, I suggest that it not be relied upon too heavily to get an impression of the quality of construction at Midland.

Third Party Assessments

CPCo plans an Independent Review Program to ensure the quality of the Midland construction project. The details of the Independent Review Program have not yet been worked out between the NRC Staff (Region III) and CPCo. Documents describing the program proposed by CPCo are available upon request. Correspondences are also available describing the separate QA program for soils remedial work. An independent third party appraisal of the initial phases of the construction of the auxiliary building underpinning is underway. Additional assessment programs have been undertaken at Midland. These are in addition to the assessments planned to satisfy the NRC's required (criteria not yet defined) independent third party assessment.

Assessments completed to date:

1. Consumers Power Company Biennial Quality Audits
 - a. 1976 - Nuclear Audit and Testing Company (NATCO)
 - b. 1978 - Management Analysis Company (MAC)
 - c. 1980 - MAC
2. Special Assessment of Midland QA (1981)-MAC
3. Bechtel Corporate Staff project evaluation (1982), results not yet available.

Assessments planned:

1. Independent Review Program
 - a. INPO type construction evaluation (horizontal type review) - MAC
 - b. Biennial QA Audit - MAC
 - c. Independent Design Verification Program (IDVP) (vertical slice) - Tera Corporation. Tera will review the Aux. Feed-Water System plus one of the following systems.
 1. Electrical Power System (Diesel Generator)
 2. Safeguards Chilled Water System
 - ~~3. Containment Isolation System~~ DXI

Region III concurrence on the Midland Plant Independent Review Program is imminent. I understand that the Staff's (ACRS requested) independent design verification will include only the work to be done by the Tera Corporation.

Systems Completion Plan

On December 3, 1982 Consumers Power Company initiated a systems completion plan at the Midland Nuclear Cogeneration Plant. This Plan is intended to provide more efficient control over the completion of work at the nuclear plant. The Midland Plant, now 85 percent complete, initiated this completion plan to develop a more detailed assessment of the work remaining to be done on the systems in the auxiliary building, diesel generator building, and containment buildings. The program will be carried out by design and test engineers, quality assurance personnel, and construction forces who will work as coordinated teams to implement the program. Another objective of the plan is to improve CPCo's performance in meeting the regulations and expectations of the U.S. Nuclear Regulatory Commission. Implementation of the plan resulted in the reduction of the manual construction workforce by over 1,000 workers leaving approximately 4,000 people at work on the Midland site. The workforce had been gradually reduced in recent months because of job completion in containment areas but the plan caused a larger layoff. Additional specialized staff will be required to carry out the program so some of the construction force may be recalled. Work is continuing on the nuclear steam supply system, the turbine building, and miscellaneous systems. The first phase of the system completion program will be to remove all construction material and temporary equipment from the buildings included in the program. Each facility will then be cleaned, and the system completion teams will carry out their reinspections on an area by area basis. As each area is reinspected and the results analyzed, the systems completion team will oversee the completion of any needed remaining work. The completed systems will then be turned over to Consumers Power for checkout and startup testing.

The system completion program work will be done in parallel with underground foundation work. CPCo has started part of the foundation work. The foundation work will resolve the plant's soils compaction problem and add seismic protection to the plant to meet more stringent earthquake protection requirements than were called for in the plant's initial design. Because of the delay in completing the foundation work, CPCo said that the project completion dates and schedules "will slip by some months."

Letters from Member of the Public

Dr. Okrent has received letters from Ms. Mary Sinclair (dated December 14, 1982) and Ms. Billie Garde (dated January 13, 1983) urging that the ACRS get actively involved in the QA/QC issues at Midland. Copies of each of these letters were sent to each of the ACRS members. I have reviewed each of these

letters carefully and have found no issues, related to Midland QA/QC, that the Committee was not already aware of. Ms. Garde did provide several informative attachments with her letter that the Committee had not previously received. Since receiving Ms. Garde's letter I have acquired a complete set of the NRC's revised testimony to the AS&L3 re Midland QA/QC (Includes testimony by Keppler, Gilray, Hood, and Cook). This testimony is available upon request.

General Comments

There have been and continue to be significant QA/QC problems at Midland. This situation has been identified by the NRC Region III Staff and has spurred public concern and media interest. Whether CPCo can assure appropriate quality of the Midland plants has yet to be demonstrated. The Committee should convince itself that the Midland plants have been or will be constructed and operated safely. Midland's QA/QC history is certainly a relevant fact that the Committee should make use of in making its judgement. However, the Committee should not focus on the past. Rather, the Committee should ask itself: Have design and construction deficiencies been caught and corrected? What is the safety significance of identified deficiencies? Has the sample been sufficiently representative to assure overall plant safety? Is there reasonable assurance that problems will not recur? I don't have the answers to these questions. The Committee might consider asking the applicant or the Region III Staff to paint for us the "big picture" as far as QA/QC at Midland. I believe the Committee should know what deficiencies have been identified by the NRC, CPCo, and others. It should know how these deficiencies have been corrected in both the generic and the specific senses. This will require alot of analysis, not just a list of deficiencies or a chronology of noncompliances. Finally, the Committee should receive an integrated description of efforts being taken to assure appropriate (safe) plant quality and operation. I think that the Committee has already asked for such an analysis. Perhaps the Committee needs to reiterate or clarify its request.

Attachments:
As stated