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

Attachment III

December 9, 1982

MEMORANDUM FOR: ACRS Members

FROM: D. C. Fischer, Staff Engineer D. Fischer

SUBJECT: REGION III REPORT ON MIDLAND DESIGN AND CONSTRUCTION PROBLEMS, THEIR DISPOSITION, AND OVERALL EFFECTIVENESS OF THE EFFORT TO ASSURE APPROPRIATE QUALITY

1. The ACRS Interim (5% letter) Report on Midland Plant, Units 1 and 2 dated June 8, 1982 requested in part, "a report which discusses design and construction problems, their disposition, and the overall effectiveness of the effort to assure appropriate quality." Attached is the "Summary and Conclusion of Overall Effectiveness" portion of the Staff's (Region III) report written in response to the Committee's request.

2. The body of the Staff's report (Section III, Design and Construction Problems As Documented in NRC Inspection Reports) contains a chronology, 1970 through June 30, 1982, of QA-related deficiencies identified in I&E Inspection Reports. It provides details on the significant construction problems identified in the Summary. Unfortunately, it makes extensive reference to the I&E Inspection Report numbers and fails to summarize either the noncompliances or the associated corrective action. If you would like a copy of the complete report, please do not hesitate to ask me for one. The Staff intends to submit a final report on construction QA to the ACRS covering the period from July 1, 1982 through the completion of construction.

3. The ACRS Subcommittee on Midland Plants Units 1 and 2 will address QA/QC at Midland at a future subcommittee meeting(s). The AS&LB is currently scheduled to begin hearings on Midland's construction QA in early February 1983. The ACRS discussion of QA/QC at Midland will probably be after those hearings are completed.

4. The NRC Staff's report typically lists only non-compliances identified in I&E Inspection Reports. There may be numerous QA/QC deficiencies identified by other mechanisms (e.g., 50.55e reports, nonconformance reports, audit findings, etc.). The Committee may wish to supplement this report

with a report by the Applicant on significant Applicant identified QA/QC deficiencies, their disposition, etc. If the Committee desires such a report then it's request to Consumers Power Company should be as specific as possible. If the request is not specific, we might get an inordinant amount of information that does not address the Committee's concerns. Asking the Applicant to make this kind of self evaluation would help the Committee get a more complete picture of Midland QA/QC history.

Attachment:
As stated

cc: ACRS Technical Staff
ACRS Fellows
Midland Plant Consultants W/Attach.

II. Summary and Conclusions of Overall Effectiveness

Since the start of construction, Midland has experienced some significant problems resulting in enforcement action (enforcement statistics are summarized in Table 1). Following the identification of each of these problems, the licensee has taken action to correct the problems and to upgrade the QA program and QA/QC staff. The most prominent action has been an overview program which has been steadily expanded to cover safety related activities. In spite of the corrective actions taken, the licensee continues to experience problems in the implementation of quality in construction.

Significant construction problems identified to date include: (1) 1973 - cadweld splicing deficiencies (Paragraph C.2); (2) 1976 - rebar omissions (Paragraph F.5); (3) 1977 - bulge in the Unit 2 Containment Liner Plate (Paragraph G.3); (4) 1977 - tendon sheath location errors (Paragraph G.4); (5) 1978 - Diesel Generator Building settlement (Paragraph H.10); (6) 1980 - allegations pertaining to Zack Company heating, ventilating, and air conditioning (HVAC) deficiencies (Paragraph J.7); (7) 1980 - reactor pressure vessel anchor stud failures (Paragraph J.8); (8) 1981 - piping suspension system installation deficiencies (Paragraph K.4); and (9) 1982 - electrical cable misinstallations (Paragraph L.2).

Consumers Power has on repeated occasions not reviewed problems to the depth required for full and timely resolution. Examples are: (1) rebar omissions (1976); (2) tendon sheath location errors (1977); (3) Diesel Generator Building settlement (1978); and (4) Zack Company HVAC deficiencies (1980). In each of these cases the NRC, in its investigation, has determined that the problem was of greater significance than first reported or that the problem was more generic than identified by Consumers Power Company.

The Region III inspection staff believes problems have kept recurring at Midland for the following reasons: (1) Overreliance on the architect-engineer, (2) failure to recognize and correct root causes, (3) failure to recognize the significance of isolated events (4) failure to review isolated events for their generic application, and (5) lack of an aggressive quality assurance attitude.

A history of the Midland design and construction problems and their disposition, as identified and described in NRC inspection reports, is contained in the following section (III). This history is for the period from the beginning of construction through June 30, 1982.

ENFORCEMENT STATISTICS

YEAR	INSPECTIONS	NONCOMPLIANCES/ DEVIATIONS	HEADQUARTERS NOTICE OF VIOLATION	CIVIL PENALTIES	IAL's/ CAL's	ORDERS MODIFYING CP/ SHAU CAUSE ORDERS	SIGNIFICANT CONSTRUCTION PROBLEMS
1970	6	4	0	0	0	0	0
1971	2	0	0	0	0	0	0
1972	1	0	0	0	0	0	0
1973	11	6	0	0	0	1 (Cadweld)	1 (Cadweld)
1974	11	3	0	0	0	0	0
1975	7	0	0	0	0	0	0
1976	9	17	1 (Rebar)	0	1 (Rebar)	0	1 (Rebar)
1977	15	10	0	0	(Tendon 1 Sheath)	0	(Bulge in Containment Liner and 2 Tendon Sheath Installation Errors)
1978	23	14	0	0	0	0	1 (Diesel Generator Bldg. Settlement)
1979	30	17	0	0	0	(Diesel Generator 1 Bldg. Settlement)	0
1980	37	21	0	1 (Zack)	1 (Zack)	0	2 (Zack HVAC & Reactor Anchor Studs)
1981	23	21	0	0	(Pipe Suspension 1 System)	0	1 (Pipe Suspension System)
1982	14	7	0	0	0	2 (Diesel Generator Bldg. Settlement)	1 (Electric Cable Routing)