

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of

CONSUMERS POWER COMPANY

(Midland Plant, Units 1 and 2)

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Docket Nos. 50-329 OM & OL  
50-330 OM & OL

NRC STAFF TESTIMONY  
WITH RESPECT TO QUALITY ASSURANCE

Q.1. Please state your name and position with the NRC.

A. My name is John William Gilray. I am a Principal Quality Assurance Engineer in the Quality Assurance Branch of the Office of Nuclear Reactor Regulation. I participate as a senior reviewer of quality assurance program descriptions in Safety Analysis Reports to determine their acceptability prior to issuing a construction permit or operating license. I graduated with a B.S. in Mechanical Engineering in 1958. For the past 22 years, I have been an engineer in quality assurance and quality control activities for programs associated with Navy Nuclear, NASA aerospace, and government and commercial nuclear projects.

Currently, my principal assignments deal with the quality assurance review for the re-start and operations phase of TMI-1 and special quality assurance review of the design and construction programs for South Texas, Marble Hill, and Midland relative to the corrective actions and subsequent improvements to these quality assurance programs.

A copy of my professional qualifications is attached.

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Q.2. Please state the dates of prior approval of the quality assurance program at Midland.

A. The quality assurance program for the design and construction of the Midland Plant was found acceptable by the Commission, and the results of this evaluation are described in the SER dated November 12, 1970 and in the Supplement #2 to the SER dated July 1977. The docketed quality assurance program is still acceptable and meets the criteria of Appendix B to 10 CFR 50 and quality-related regulatory guides and ANSI Standards. Ineffective implementation of the program, however, led to the issuance of the December 6, 1979 Order Modifying Construction Permits.

Q.3. What has been your involvement in the Midland Project?

A. As a result of inspection findings by the Office of Inspection and Enforcement relative to the soils work, I was assigned as the quality assurance reviewer to assist in the evaluation of CPC's responses to our 10 CFR 50.54 (f) questions initiated on March 21, 1979. I reviewed and evaluated the soils problem at Midland to determine if CPC had given sufficient attention to determining the root causes of the soils problem and to identify adequate corrective actions to preclude recurrence. I reviewed CPC's response to question 1 which was submitted on April 24, 1979 (Attachment 9 to the testimony of Eugene J. Gallagher) and their response to question 23 which was submitted on November 13, 1979 (Attachment 14 to the testimony of Eugene J. Gallagher).

Question 1 actually consists of 4 questions which read as follows:

- (1) Identify those quality assurance deficiencies that contributed to this problem, the possibilities of these deficiencies being of a generic nature and affecting other areas of the facility, and describe the corrective actions you have taken to preclude these deficiencies from happening in the future;
- (2) What assurance exists that the apparent areas of contradictions in the PSAR and FSAR as described by the Office of Inspection and Enforcement during the meetings of February 23 and March 5, 1979, do not exist in other sections of the PSAR and FSAR dealing with matters other than fill?
- (3) Investigate other activities not associated with the fill, but important to safety for other systems, components, and structures of the Midland facility, to determine if quality assurance deficiencies exist in view of the apparent breakdown of certain quality assurance controls. Identify those items investigated and the results of your investigation; and
- (4) Considering the results of your investigation in item (3) above, describe your position as to the overall effectiveness of your quality assurance program for the design and construction of the Midland plant.

Question 23 became necessary because we did not receive a satisfactory response from CPC to question 1. To date we have not received a satisfactory response from CPC to question 23. Additional acceptable improvements have been discussed in the CP/IE Reg. III meeting of March 13, 1981 and in the CP letter of J. Cook to J. Keppler dated April 30, 1981. Upon incorporating these improvements with the Midland docketed response to question 23, the overall response to questions 1 & 23 should be found acceptable to the NRC staff. Based on my evaluation of responses to questions 1 and 23 provided by CPC, I have concluded that prior to December 6, 1979, quality assurance with respect to soils work at the site was not implemented in accordance with the docketed quality assurance program description previously approved by the AEC and the NRC.

Q.4. State your opinion as to the effectiveness of the implementation of the quality assurance program and the basis for your opinion.

A. Persistent problems during the design and construction of the Midland Plant since 1970 have raised serious questions regarding the effectiveness of the quality assurance program. Ineffective implementation of the quality assurance program and a lack of quality assurance organization involvement in the day-to-day activities associated with safety-related activities in the soils area are clearly identified in the Office of Inspection and Enforcement inspection reports #78-12 and #78-20 (Attachments 2 and 7 respectively to the testimony of Eugene J. Gallagher) and in CPC's response to 10 CFR 50.54 (f) questions 1 and 23 (Attachments 9 and 14 respectively to the testimony of Eugene J. Gallagher). They include:

- (1) Inconsistencies between construction specifications and consultant reports.
- (2) Lack of formal revisions of specifications to reflect clarification of specification requirements and improper use of memos as design control.
- (3) Inconsistency of design basis within the FSAR relating to diesel generator building fill material and settlement values.
- (4) Inconsistencies between the settlement calculations and the original design basis of the diesel generator building.
- (5) Inadequate design coordination in the design of the duct bank.
- (6) Insufficient compactive effort used in backfill operation.
- (7) Insufficient technical direction in the field.
- (8) Inadequate quality control inspection of placement of fill.
- (9) Inadequate soil moisture testing.
- (10) Incorrect soil test results.
- (11) Inadequate subcontractor test procedure.

(12) Inadequate corrective action for repetitive nonforming conditions.

(13) Inadequate quality assurance auditing and monitoring of the plant fill work activities.

Summarizing, these deficiencies, which have occurred from the start of soils construction were caused by the lack of quality assurance controls in program procedures, design, installation, surveillance, inspection, tests, verifications, and audits. Based on the above, I conclude that the docketed quality assurance program description was not adequately implemented for the soils work prior to December 6, 1979.

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QUALIFICATIONS AND EXPERIENCE OF  
JOHN WILLIAM GILRAY

Present Position      Title: Principal Quality Assurance Engineer (Nuclear)

Responsibilities:      Participates as a senior member of the Office of Nuclear Reactor Regulation - Quality Assurance Branch staff whose function is primarily one of evaluating, from a safety standpoint, reactor construction and operating proposals with response to quality assurance and/or technical specifications. Serves as Senior Nuclear Engineering Specialist for group evaluation of power reactor license applications.

6/63 - 6/72      Title: Quality Control Engineer for the AEC Space Nuclear Propulsion Office.

Responsibilities:      As the SNPO-C on-site Quality Control Engineer in the prime contractor's plant, is responsible for monitoring the contractor's quality control program and providing technical direction relative to the testing, inspection and adherence to aerospace-rated quality control procedures for the development of the nuclear rocket engine (NERVA). Directs inspection personnel of the Air Force Plant Representative's office assigned to NERVA program relative to day-to-day inspections and quality surveys.

8/62 - 6/63      Title: Quality Control Engineer for Bourn's Inc. (Electronic Component Co.)

Responsibilities:      Responsible for the Quality Control and Reliability policies and activities in the manufacturing and inspection of potentiometers and relays used in the Aerospace industry. Evaluates the design and inspection processes for adequate quality and reliability requirements.

1/59 - 8/62      Title: Quality Control Engineer at Alco Products, Inc. (Fabricator of Nuclear Components)

Responsibilities:      Responsible for establishing and assuring proper implementation of Quality Control and Quality Assurance requirements for nuclear components from the design purchasing and manufacturing phases thru the shipment of the components of the Navy Nuclear Shipyards.

Schooling: Graduate in BSME 1958

Courses: Optical Tooling Engineering  
Radiography and Film Reading

Memberships: Society of Non-Destructive Testing  
American Society of Quality Control

PE: Registered Professional Quality Engineer