Consumers Power Company

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Mr J G Keppler, Regional Administrator
US Nuclear Regulatory Commission
Region III
799 Roosevelt Road
Glen Ellyn, IL 60137

MIDLAND PROJECT -
DOCKET NOS 50-329 AND 50-330
MAIN STEAM ISOLATION VALVES
FILE: 0.4.9.57 SERIAL: 17558

References: J W Cook letters to J G Keppler, Same Subject:

(a) Serial 14683, dated February 4, 1982
(b) Serial 16150, dated April 1, 1982
(c) Serial 17502, dated June 1, 1982

The referenced letters were interim 50.55(e) reports concerning deficiencies in electrical components associated with main steam isolation valve actuators, logic cabinets and control panel inserts. This letter is our final report on this subject.

Attachment 1 provides a description of the deficiencies and a summary of the corrective actions which have been taken with regard to this problem. In addition to the information contained in the attached report, milestones for corrective action regarding control panel inserts have been established for items 1, 3 and 4 for completion by July 1983.

JAMooney for J.W. Cook

WRB/lr

Attachment 1: MCAR-55, Final Report, dated July 28, 1982

CC: Document Control Desk, USNRC
Washington, DC

RJCook, NRC Resident Inspector
Midland Nuclear Plant

CC CBechhoefer, ASLB Panel
RSDecker, ASLB Panel
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Management Corrective Action Report (MCAR)

SUBJECT: MCAR 55 (Issued 1/15/82)

Deficiencies in Electrical Components Associated with MSIV Actuators, Logic Cabinets, and Control Panel Inserts

FINAL REPORT

DATE: July 28, 1982

PROJECT: Consumers Power Company
Midland Plant Units 1 and 2

Bechtel Job 7220

Description of Deficiency

Main steam isolation valves (MSIVs) and actuators were supplied by Energy Products Group (EPG), a division of Gulf and Western Manufacturing Company, under Purchase Order 7220-M-118A(Q). The logic cabinets and control panel inserts were vendor supplied units not covered in detail by the valve specification, and were provided with off-the-shelf commercial grade items without seismic qualification. Recent review of the MSIV actuator design and accessories also revealed that certain components of the hydraulic actuator, that must operate in order for the MSIV to perform its safety function, are not in accordance with the applicable IEEE standards and Regulatory Guide 1.75 requirements.

The major safety-related electrical components of the MSIV system are the actuators, the logic cabinets, and the control panel inserts. Details of the nonconformances and deficiencies identified are as follows:

A. Actuator

1. The separation criteria of Regulatory Guide 1.75 were not met.

2. The electrical components listed below were not procured by EPG as Class 1E nor in accordance with a quality assurance program meeting the requirements of 10 CFR 50, Appendix B or ANSI N45.2.

   a. Wiring
   b. Trip solenoids
   c. Solenoid valves
   d. Limit switches

B. Logic Cabinets

1. The cabinets and their components are not seismically qualified.

2. The separation criteria of Regulatory Guide 1.75 were not met.

3. The electrical components were not procured by EPG as Class 1E nor in accordance with a quality assurance program meeting the requirements of 10 CFR 50, Appendix B, or ANSI N45.2.

C. Control Panel Inserts

1. The control panel inserts and their components are not seismically qualified.

2. The separation criteria of Regulatory Guide 1.75 were not met.

3. The electrical components were not procured by EPG as Class 1E nor in accordance with a quality assurance program meeting the requirements of 10 CFR 50, Appendix B or ANSI N45.2.

Summary of Investigation and Historical Background

Bechtel became aware of possible inadequacies in the MSIVs by Consumers Power Company Nonconformance Report M-01-9-0-064, an unsolicited proposal for modification from EPG dated April 1, 1980, and a review of environmental qualification data.

Contacts with the vendor, review of available documentation, and inspection of the installed hardware at the jobsite confirmed the deficiencies described above.

Analysis of Safety Implication

The safety function of the actuator and associated electrical components is to provide emergency closure of the MSIV upon receipt of either a Channel A or Channel B main steam line isolation signal (MSLIS). All electrical components that are required for transmission of the MSLIS, tripping the latch mechanism, closing the valve, and maintaining tight shut-off, must be capable of performing the safety function during or after a seismic event. A potential safety problem exists if failure of any of the components results in failure of the MSIV to perform its safety function as described in the FSAR.

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Probable Cause

The original MSIV design specification was prepared with the intention of purchasing only valves and power operators. Logic cabinets and control panel inserts were not contemplated when the original specifications were prepared and issued for bid; and therefore, design requirements and criteria for such items were not included in the technical specification. However, EPG offered the panel inserts and logic cabinets in their proposal as additional items as an incentive to market their unique and innovative ball valve design for MSIV service. During the course of procurement, a failure to address the full safety-related requirements of the design resulted in the described condition.

This closes Action Item 6 of MCAR 55.

Corrective Action

1. Purchase Order 7220-M-238(Q), Main Steam Isolation Valve Electrical Modifications, has been issued to procure materials that would correct the deficiencies and nonconformances that were identified in the existing electrical equipment. This purchase order has been placed with EPG. The scope of work to be covered is summarized below. The corrective actions satisfy the requirements of Items 1 and 2 of MCAR 55.

   A. Actuator

      1. Seismically and environmentally qualified EA-180 NAMCO limit switches, essential mounting brackets, wiring, and flexible conduit will replace existing components. Modification of the actuator will bring it into compliance with the seismic requirements of 7220-M-238(Q) and the separation criteria of Regulatory Guide 1.75.

      2. Seismic qualification of the actuator trip solenoids and solenoid valves will be obtained.

   B. Logic Cabinets

      1. Provide four (4) new logic cabinets to meet the seismic and environmental qualification requirements and separation criteria as defined in Specification 7220-M-238(Q). Only one Class 1E channel will be contained in each cabinet.

   C. Control Panel Inserts

      1. Modify or replace four (4) control panel inserts to meet the seismic and environmental qualification requirements and criteria as defined in 7220-M-238(Q).

2. All MSIV Class 1E electrical component deficiencies have been added to the Qualification Open Action Summary dated March 11, 1982. This action satisfies Corrective Action 3 of MCAR 55.

3. The main steam isolation valve specification, 7220-M-118A, identified the qualification requirements for the valve and actuator. However, the vendor supplied logic cabinets and control panel inserts were not supplied in accordance with a recognized qualification program; a fact which was not detected by the MCAR 25 rereview. Specification 7220-M-238(Q) was prepared to correct the deficiencies and nonconformances that exist in the MSIV electrical equipment.

   The scope of MCAR 25 did not require review of the specification to determine adequacy of imposed qualification requirements. It reviewed the specification requirements against the FSAR (e.g. safety, Seismic Category I, adequacy of qualification reports to specification requirements).

   Review of Q-listed equipment specifications in preparation for NRC audits of seismic and environmental qualifications will ensure that unresolved problems are identified. This process coupled with tracking of all NCRs in accordance with EDP 4.61 provides assurance that acceptable qualifications will be provided. The above closes the recommended Action Item 4 of MCAR 55.

4. Investigation of all Q-listed valve orders on the Midland project revealed that electrical components associated with logic cabinets and control panel inserts that were specified with inadequate qualification requirements were unique to Purchase Order 7220-M-118A(Q) only.

   Limitorque actuators provided on Q-listed valve orders identified on MCAR 46 as having qualification and documentation problems are being resolved on MCAR 46 to satisfy FSAR commitments. Actuators and electrical components on orders not identified on MCAR 46 are being identified and investigated for adequate qualifications and documentation as a part of the current seismic and environmental qualification effort for all safety-related equipment. Each of these efforts will result in reports which will be incorporated in or referenced in the FSAR. This closes Action Item 5 of MCAR 55.

   All necessary corrective actions related to this MCAR have now been established, and have either been completed or entered into the normal engineering release tracking system.

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Reportability

Based on the deficiencies that exist in the equipment and the magnitude of the effort required to make the necessary repairs, we determined that the subject of this MCAR is reportable within the requirements of 10 CFR 50.55(e). The NRC has been duly notified.

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