

Bechtel Associates Professional Corporation

Subject: MCAR #28

Interim Report 1

Date: June 7, 1979

Project: Consumers Power Company
Midland Plant Units 1 & 2
Bechtel Job 7220

Introduction

This report is submitted to advise regarding the interim status and course of action required pursuant to MCAR #28 and Bechtel NCR #2176.

Description of Discrepancy

Bechtel field inspection of the installed ESFAS status display light modules on panel 1C14 revealed discrepancies regarding the soldered wire connections as follows:

<u>Switch</u>	<u>Terminal</u>	<u>Problem Description</u>
ISV-0127	G	Not soldered
ISV-0127A	G	Loose solder joint
ISV-0127A	C	Cold solder joint
IMO-1257	G	Not soldered
IMO-5336A	A	Not soldered
IMO-0912	G	Wire touching movable member

The wire connections on the status display panel modules for panels 1C14 and 2C14 were inspected by the QA manager of the vendor (Magnetics, a division of Spang Industries) and Bechtel engineering on May 22, 1979. This inspection has revealed the need for more thorough inspection for all status display modules on panels 1C14, 2C14 and 0C10. Following is the preliminary response to the recommended actions:

1. Determine what effect the discrepant material could have on plant safety if uncorrected.

From the electrical schemes and wiring diagrams we have determined that if these problems are uncorrected they could cause:

- a) loss of safety display indication
- b) false indication
- c) overheating and possible burn out of the voltage dropping resistor
- d) preliminary findings show there is no likelihood of blowing a fuse in the control circuit because the dropping resistors are connected in such a way that any grounding or touching of the moveable parts will cause the voltage dropping resistors to overload and overheat and possibly burn out.

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None of the above conditions is likely to disable the control circuit.

2. Examine other soldered components by Magnetics. Other components by Magnetics include the following:

- a) light display units for panels 1C14, 2C14 and 0C10.
- b) amphenol connectors for 1C14 and 2C14 light display units.
There are no amphenol connectors for panel 0C10.
- c) Resistor banks for 0C10, 1C14 and 2C14 light display units.
- d) Nonsafety related digital indicators.

Light display units for panel 1C14 and 2C14 are detachable and have been shipped back to Magnetics, the panel vendor, for necessary inspection and corrections.

The other components listed above will be checked in the field per the schedule which is presently being established between Bechtel and Magnetics.

3. Determine why Magnetics Quality Assurance Program and Bechtel Procurement Supplier Quality Program did not detect this discrepant material.

- a) Magnetics Quality Assurance Program: A specific, detailed inspection plan for soldered connections was not a part of QA program, which resulted in an inadequate inspection of soldered connections.
- b) Bechtel Procurement Supplier Quality Program: Bechtel Procurement Supplier Quality Program calls for random surveillance inspection only. Further, supplier quality representative inspection might not have been adequate because of lack of detailed inspection criteria.

4. Determine if a functional check would have revealed the above discrepant conditions.

A functional test of the status display lamp assemblies was performed and was co-witnessed by Bechtel SQR and Bechtel engineering. This test indicated that all functions were performed satisfactorily. It is, therefore, concluded that a functional test of these assemblies or other components would not necessarily detect soldering deficiencies.

5. Based on the above 4 items determine reportability under 10 CFR 50.55e by May 25, 1979.

Because of the indeterminate nature of the possible failure modes and therefore the possibility that safety related circuits may have been rendered inoperable, it is suggested that this problem should be considered reportable under 10 CFR 50.55e.

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6. Probable Cause(s)

Present investigation indicates that lack of specific detailed manufacturing and inspection procedures for soldering operations was the probable cause of the discrepant material. The supplier used general type procedures which lacked the required amount of detail to assure the level of quality required.

Although a functional test of the status display light assemblies was performed and indicated satisfactory results, the nature of the problem appears to be undetected by functional test.

7. Corrective Actions

The following corrective actions will be taken to prevent recurrence of the discrepant material.

- a) Require Magnetics to submit a comprehensive, detailed manufacturing and inspection program for soldering practices.
- b) Magnetics to perform 100% reinspection of all soldered wire terminations and connections for the status display light assemblies and associated components and devices.
- c) Bechtel field quality control (QC) to perform inspection at completion of Item 2. Bechtel supplier quality representative (SQR) to perform 100% inspection of modules at the supplier's plant prior to shipment to jobsite.
- d) Bechtel procurement supplier quality department (San Francisco) has issued a supplier quality action request to all offices and supplier quality representatives requesting investigation of their suppliers for similar problems. Upon receipt and review of the responses, procedures will be developed to provide a comprehensive supplier surveillance program.

Forecast Date on Corrective Actions

A schedule for the corrective actions will be provided in interim report no. 2.

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