

ARIZONA



PUBLIC SERVICE COMPANY

P. O. BOX 21666 · PHOENIX, ARIZONA 85036

January 29, 1982
ANPP-20030-GHD/BSK

U. S. Nuclear Regulatory Commission
Region V
Creskide Oaks Office Park
1450 Maria Lane - Suite 210
Walnut Creek, California 94596-5 38



Attention: Mr. B. H. Faulkenberry, Chief
Reactor Construction and
Engineering Support Branch

Subject: Final Report - DER 81-37
A 50.55(e) Report Relating to Foxboro Displays Which Failed
Environmental Qualification Testing
File: 82-019-026
D.4.33.2

Reference: (A) Telephone Conversation between J. Eckhardt and
G. Duckworth on October 14, 1981

(B) ANPP-19458, dated November 13, 1981, Interim
Report

Dear Sir:

Attached, is our final written report of the deficiency referenced
above, which has been determined to be Not Reportable under the
requirements of 10CFR50.55(e).

Very truly yours,

F. E. Van Brunt, Jr.
APS Vice President
Nuclear Projects
ANPP Project Director

EEVBJr/GHD:skc

Attachment

cc: See Page 2

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U. S. Nuclear Regulatory Commission
Attention: Mr. B. H. Faulkenberry, Chief
ANPP-20030-GHD/BSK
January 29, 1982
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cc: Richard DeYoung, Director
Office of Inspection and Enforcement
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

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FINAL REPORT - DER 81-37

DEFICIENCY EVALUATION 50.55(e)

ARIZONA PUBLIC SERVICE COMPANY (APS)

PVNGS UNITS 1, 2, and 3

I. DESCRIPTION OF DEFICIENCY

Foxboro Model 270 Displays are required to be environmentally and seismically qualified per specification requirements and IEEE Stds 323-1974 and 344-1975; however, these units were delivered to the jobsite prior to qualification, as authorized by Bechtel Supplier Deviation Disposition Request 2605. Operational failures were experienced by Foxboro during the final seismic testing following the environmental test. The failures are attributed to corrosion of Burndy connectors within the display electronics. This equipment is being purchased by Bechtel and also by Combustion Engineering as part of the NSSS contract.

II. ANALYSIS OF SAFETY IMPLICATIONS

This condition is evaluated as not reportable under the requirements of 10CFR 50.55(e) because (i) it is not a significant breakdown in any portion of the QA program, (ii) it is not a significant deficiency in the final design, since the design was established by all parties not to be finalized until successful completion of the qualification test, (iii) it is not a significant deficiency in construction, and (iv) it is not a deviation from the performance specification for the reasons in (ii) above. The circumstances surrounding these units was never offered for acceptance. Foxboro, Bechtel, CE and APS were all aware that the Model 270 Displays had not completed all the required testing. This equipment was delivered to the jobsite prior to being qualified to assist the construction activity and to permit the cold-hydro testing program to be completed on schedule.

III. CORRECTIVE ACTION

Refer to the attached Foxboro letter PV No. 96 dated 12-22-81.

Bechtel and Foxboro are currently developing the detailed plan to implement the required modifications. A complete listing by tag number of all Model 270 displays that have been supplied by Foxboro (including both Bechtel and CE purchased displays) is being prepared by Bechtel.

A meeting is scheduled to be held at the jobsite with Foxboro during the week of February 1, 1982 to agree on which displays require modification and how the modification will be handled.

It is estimated that approximately 360 displays per unit will require modification for an overall estimated total of 1080.

After the meeting Engineering will issue a Design Change Package with a complete listing by tag number of all Model 270 displays which require modification, so that the work can be started. It is estimated that the work will be completed within six (6) months.

38 Neponset Avenue
Foxboro, MA 02035
Telephone 617-543-8750
Telex 927-602

The Foxboro Company

December 22, 1981

PV No. 96

Bechtel Power Corporation
Terminal Annex
P. O. Box 60860
Los Angeles, California 90060

Palo Verde Nuclear Generating Station
Bechtel Order No. 10407-13-JM-111
Foxboro S.O. Nos. 76N-60758; 77N-31240
and 77N-31241

Attention: Mr. W. G. Bingham
Project Engineer

Subject: Modifications to the Model 270 Display

Gentlemen:

Foxboro has recently completed evaluation of the M/270 Display failures during qualification testing. The failures were due to fretting corrosion of the circuit board connectors within the display unit. Fretting corrosion results from a combination of relative motion between the connector valves (due to low level vibration) and oxidation of the connection points. Design changes are being implemented to correct the corrosion. These design changes entail modifications to the electronics portion of the display as well as to the housings.

In order to reduce the effects of vibrations, three modifications have been made:

1. Stiffeners have been added to the electronics cage to reduce the motion of the circuit boards.
2. An additional set screw has been added to more firmly retain the electronics within the housing.
3. Shims have been added to the housing to reduce relative motion of the electronics within the housing.

To remove the effects of oxidation lubricating caps containing a conductive lubricant have been added to female connectors on the electronics and housings. Modified displays are in a testing program with qualification scheduled to be complete in late 1982.

Foxboro intends to incorporate the above modifications in all of the displays presently installed at Palo Verde. Since the modifications require disassembly, Foxboro recommends that the electronics portion of the display be returned to the factory to perform the rework and also to allow a complete checkout of the electronics. The modifications to the housings are straight forward and can be implemented in the field or the factory at Bechtel's option.

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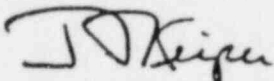
Bechtel Power Corporation
December 22, 1981
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PV No. 96

Foxboro will provide service personnel to remove the electronics modules and to return them to the factory. These service personnel will also perform the modifications to the housings in the field if so desired. Our Los Angeles field service organization will coordinate the field work. Bechtel is requested to provide a contact at the site for our service personnel. The field work can commence in January 1982.

Foxboro apologizes for any inconveniences caused by the failure of the M/270 Display during qualification testing. Extensive testing of the modified M/270's has been performed to ensure that these reworked displays will meet all requirements. Our service, engineering and manufacturing organizations remain available to provide any assistance in reworking these displays.

Very truly yours,

THE FOXBORO COMPANY



J. T. Keiper, Manager
Nuclear Systems Engineering

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FOXBORO
Engineering