



RECEIVED  
NRC

## Arizona Nuclear Power Project

P.O. BOX 52034 • PHOENIX, ARIZONA 85072-2034

NOV 19 PM 1:11

November 15, 1984  
ANPP-31127-TDS/TRB

U. S. Nuclear Regulatory Commission  
Region V  
1450 Maria Lane - Suite 210  
Walnut Creek, California 94596-5368

Attention: Mr. D. F. Kirsch

Subject: Final Report - DER 83-73  
A 50.55(e) Reportable Condition Relating To Unqualified  
Foxboro Power Supplies.  
File: 84-019-026; D.4.33.2

Reference: A) Telephone Conversation between P. Narbut and R. Tucker on  
October 27, 1983  
B) ANPP-28290, dated November 28, 1983 (Interim Report)  
C) ANPP-28538, dated January 3, 1984 (Time Extension)  
D) ANPP-28934, dated February 24, 1984 (Time Extension)  
E) ANPP-29352, dated April 24, 1984 (Time Extension)  
F) ANPP-29582, dated May 23, 1984 (Time Extension)  
G) ANPP-30448, dated September 6, 1984 (Time Extension)  
H) ANPP-30636, dated September 24, 1984 (Time Extension)  
I) ANPP-30948, dated October 25, 1984 (Time Extension)

Dear Sir:

Attached is our final written report of the Reportable Deficiency under  
10CFR50.55(e), referenced above.

Very truly yours,

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

EEVB/TRB/nj  
Attachment

cc: See Page Two

8412010137 841115  
PDR ADDCK 05000528  
S PDR

111  
IE-27

Mr. D. F. Kirsch  
DER 83-73  
Page Two

cc: Richard DeYoung, Director  
Office of Inspection and Enforcement  
U. S. Nuclear Regulatory Commission  
Washington, D. C. 20555

T. G. Woods, Jr.  
D. B. Karner  
W. E. Ide  
D. B. Fasnacht  
A. C. Rogers  
L. A. Souza  
D. E. Fowler  
T. D. Shriver  
C. N. Russo  
B. S. Kaplan  
J. R. Bynum  
J. M. Allen  
A. C. Gehr  
W. J. Stubblefield  
W. G. Bingham  
R. L. Patterson  
R. W. Welcher  
H. D. Foster  
D. R. Hawkinson  
R. P. Zimmerman  
L. Clyde  
M. Woods  
T. J. Bloom  
D. N. Stover  
J. D. Houchen  
J. E. Kirby  
D. Canady

Records Center  
Institute of Nuclear Power Operations  
1100 Circle 75 Parkway, Suite 1500  
Atlanta, GA 30339

FINAL REPORT - DER 83-73  
DEFICIENCY EVALUATION 50.55(e)  
ARIZONA PUBLIC SERVICE COMPANY (APS)  
PVNGS UNITS 1, 2, 3

I. Description of Deficiency

While researching the origin of a non-serialized Foxboro Spec. 200 power supply, removed from a safety-related instrument cabinet and sent to the Combustion Engineering (C-E) site startup office for warranty repair, it was found that codes stamped on the power supply did not conform to the standard format that identifies the power supplies intended for Class 1E service. Further investigation disclosed that unqualified Foxboro Spec. 200 power supplies have been installed in the following QIE, C-E supplied, instrument cabinets

2JSBBC02A  
2JSBCC02A  
2JSBDC02A

Unqualified power supplies in these cabinets were identified by C-E letter V-CE-19077, dated September 30, 1983. Subsequent investigation also revealed that power supplies intended for Class 1E service have been installed in non-Q instrument cabinets and power supplies not intended for nuclear service, QIE or otherwise, have been installed in safety-related instrument cabinets. Non-nuclear service power supplies are used at Palo Verde in the Auxiliary Steam System (AS) and the Cooling Tower Makeup and Blowdown System (TB)/Water Reclamation Facilities (WRF).

Evaluation

This problem was evaluated by investigating (1) the identification systems used by Foxboro; (2) the actual conditions at the site; and (3) evaluation of material control procedures and practices including quality-related procurement activities.

- (1) Foxboro has supplied Spec. 200 instrumentation to PVNGS under several purchase orders including C-E, Bechtel JM-111, subsuppliers through Zurn Industries (Auxiliary Steam Supply) and WRF.

When initial deliveries were being made to PVNGS, Foxboro had two categories of instruments, qualified (Quality Class Q) and nonqualified (non-Quality Class Q). They differentiated between the two by identifying the qualified units with serial numbers for traceability and non serialization was applied to the nonqualified units. Unit 1 and WRF equipment fell into these categories.

Later, Foxboro recognized a requirement for instrumentation which had to maintain structural integrity, but need not function to mitigate the circumstances of an accident. At this time Foxboro initiated another program for identification of qualified equipments. Class I, Class II and nonqualified instrumentation.

The Class I instrumentation is fully qualified environmentally for operation during and after a design basis seismic event. These units are identified with a serial number and a classification code number CS-N/SRC. The Class II instrumentation is qualified to maintain only structural integrity during a design basis event. These units are identified with a serial number and a classification code number CS-N/SRD. Nonqualified instrumentation have neither the CS-N/SRC nor the CS-N/SRD code numbers and are not stamped with serial numbers. Equipment deliveries from Foxboro for Units 2 and 3 fall into this category.

All Spec. 200 instrumentation classified by Foxboro as Class I and Class II are fabricated in accordance with the same QA procedures and the only difference is the documentation supporting the qualification of a given module. In fact, Class II modules can be upgraded to Class I by Foxboro, such that a given serialized module can have the supporting qualification documentation backup to qualify it for Class I service.

- (2) As the second part of the problem evaluation, the following investigations were performed:

Unit 1

A walkdown of the Unit 1 cabinets and the one TB system cabinet, per Investigation Requests A-IR-017 and 1-IR-017 revealed the following:

- No unqualified power supplies in QIE cabinets.
- A non-nuclear grade power supply in Class II (project classification R2E) cabinet 1JSFNC03F (not safety-related).
- Q class C-E supplied power supplies in Q class Bechtel supplied cabinets 1JZJAC02A, 1JZJAC02B, and 1JZJBC02A.
- A C-E supplied Class II power supply in the Bechtel supplied non-nuclear cabinet AJTBNC01.

Unit 2

Preliminary walkdown information indicates the following:

- Bechtel supplied non-nuclear grade power supplies in C-E supplied Q class cabinets 2JSBBC02A and 2JSBDC02A. These are also identified in Section I above. Note: A non-nuclear grade power supply had been installed in C-E supplied Q-class cabinet 2JSBCC02A in the past but had been replaced by a Class I power supply. Documentation has been updated to reflect this change.
- Six C-E supplied cabinets, 3 of which are Q class, contain (13) power supplies that were shipped in cabinets for Unit 3 under C-E P.O. #9603109-14473. Six of the power supplies under that P.O. were intended for Class I E service. The remaining 7 power supplies under that P.O. were intended for Class II service. The fact that Unit 2 Q-class cabinets have power supplies from that Unit 3 P.O., makes the Unit 2 Q class cabinets suspect. Their tag numbers are listed below.

2JSBAC02A  
2JSBAC02B  
2JSBCC02A

Final walkdown will determine whether or not the power supplies in these cabinets are qualified.

(3) The third facet of the evaluation involved the following:

- a. Overall reviews of Startup, Maintenance, and Construction material control procedures and programs were conducted. These reviews did not reveal any procedural inadequacies that could have caused or contributed to the improper use of Foxboro Power Supplies.
- b. The Qualification Maintenance Program was reviewed with regard to the procurement of new equipment additions to the plant, replacement equipment and replacement parts for qualified equipment. An administrative deficiency may have allowed Nuclear Operations to purchase some equipment unqualified for installation in the plant.

Unit 3

Preliminary walkdown information indicates no problems.

Summary

This evaluation indicates that inadequate implementation of material control procedures have resulted in commingled power supplies.

II. Analysis of Safety Implications

This condition is evaluated as safety significant. Commingled power supplies could result in failure of safety-related systems under design basis conditions.

This condition is evaluated as reportable under 10CFR50.55(e) since it represents a significant breakdown in the Quality Assurance Program. This condition is evaluated as not reportable under 10 CFR Part 21 since the affected cabinets had not been released for use in operations.

III. Corrective Action

A. Remedial Action

Investigation Requests A-IR-017, 1-IR-017, 2-IR-017, and 3-IR-017 have been issued by Bechtel Engineering to verify the results of preliminary walkdowns and to determine the full extent of the problem. The power supplies that were originally shipped for use in non-class IE cabinets and are installed in Q1E cabinets will be documented on NCRs and be replaced with power supplies intended for IE service. Additionally, the non-nuclear grade power supplies installed in nuclear service cabinets, Class Q1E or otherwise, will be removed and replaced with a correct power supply as required. This action will also be documented on NCRs.

B. Action to Preclude Recurrence

1. To address the root cause generically and to ensure that proper material control procedures and practices are implemented, Startup, Maintenance, and Construction have issued and implemented procedural improvements to more directly control materials.

These organizations are currently reviewing and monitoring these procedures to ensure adequate material control requirements are implemented. Procedural changes and training is being conducted on an on-going basis to ensure proper control and implementation.

2. The following actions will be taken to verify acceptability of items procured prior to the administrative deficiency:
  - a. Maintenance systems engineering will perform an evaluation to determine which spare/replacement parts procured as a Level 1 (specification method), Level 4 (catalogue specification method), or Level 5 (commercial grade method), purchases were for use in a safety-related (Quality Class 'Q') structure, system or component. (No spare/replacement parts have been procured as a Level 3, Verification Method, purchase.)
  - b. Maintenance Systems Engineering will identify to Nuclear Engineering, by Equipment Change Evaluation (ECE) requests, the safety-related spare/replacement parts procured as a Level 1 or 4 purchase so that ECEs can be performed to resolve the qualification status of the parts.
3. As an additional measure, the subject of control of material has been summarized and presented in Bechtel and APS Quality Talk sessions.
4. Bechtel Engineering has performed a review of all purchase order specifications which procured both Class 1E and non Class 1E components from the same supplier. This review verifies that a sufficient component identification number is used to preclude recurrence of commingled components.
5. A copy of this report will be transmitted to C-E and Foxboro for their information.