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U. S. Nuclear Regulatory Commission
Region V
Creekside Oaks Office Park
1450 Maria Lane - Suite 210
Walnut Creek, CA 94596-5368

Attention: Mr. T. W. Bishop, Director
Division of Resident
Reactor Projects and Engineering Programs

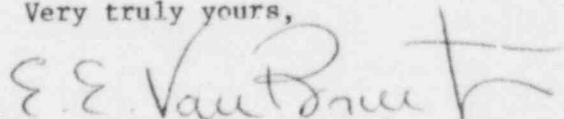
Subject: Final Report - DER 82-76
A 50.55(e) Reportable Condition Relating To Target Rock Valves
Do Not Meet Specification/Test Requirements.
File: 84-019-026; D.4.33.2

Reference: A) Telephone Conversation between P. Narbut and G. Duckworth
on November 24, 1982
B) ANPP-22590, dated December 23, 1982 (Interim Report)
C) ANPP-23223, dated March 10, 1983 (Time Extension)
D) ANPP-23641, dated May 3, 1983 (Time Extension)
E) ANPP-27523, dated August 5, 1983 (Time Extension)
F) ANPP-28247, dated November 17, 1983 (Time Extension)
G) ANPP-28608, dated January 12, 1984 (Time Extension)
H) ANPP-28884, dated February 15, 1984 (Time Extension)
I) ANPP-29288, dated April 12, 1984 (Time Extension)
J) ANPP-29612, dated May 29, 1984 (Interim Report, Rev. 1)

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:db
Attachment

cc: See Page Two

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Mr. T. W. Bishop
DER 82-76
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cc: Richard DeYoung, Director
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FINAL REPORT - DER 82-76
 DEFICIENCY EVALUATION 50.55(e)
 ARIZONA PUBLIC SERVICE COMPANY (APS)
 PVNGS UNITS 1, 2, 3

I. Description of Deficiency

Combustion Engineering (C-E) has reported deficiencies with thirty (30) target rock solenoid valves supplied to PVNGS. Of these, twenty-four (24) one-inch valves Model 77L-001 were assigned to be installed as Safety Injection Tank Valves (eight per unit) and are identified by the following unit tag numbers:

1JSIAHV605	2JSIAHV605	3JSIAHV605
1JSIAHV606	2JSIAHV606	3JSIAHV606
1JSIAHV607	2JSIAHV607	3JSIAHV607
1JSIAHV608	2JSIAHV608	3JSIAHV608
1JSIBHV613	2JSIBHV613	3JSIAHV613
1JSIBHV623	2JSIBHV623	3JSIAHV623
1JSIBHV633	2JSIBHV633	3JSIBHV633
1JSIBHV643	2JSIBHV643	3JSIBHV634

Additionally, six (6) two-inch Model 77L-003 Target Rock solenoid valves were assigned to be installed as Pressurizer Auxiliary Spray valves (two per unit) and are identified by the following unit tag numbers.

1JCHAHV205	2JCHAHV205	3JCHAHV205
1JCHBHV203	2JCHBHV203	3JCHBHV203

To support the PVNGS equipment qualification program, C-E determined that four (4) valves would be returned to C-E for additional testing in accordance with NUREG-0588. Units 1 & 2 valves were already installed at this time, so valves were selected from Unit 3 stock and identified by model numbers, serial numbers and size as follows:

<u>Model No.</u>	<u>Serial No.</u>	<u>Size</u>	<u>Unit Tag Numbers</u>
77L-001	17	1"	3JSIAHV605
77L-001	18	1"	3JSIAHV606
77L-003	5	2"	3JCHBHV203
77L-003	6	2"	3JCHAHV205

It was during the inspection of these valves by C-E that the deficiencies were revealed. These are classified as items which can be identified by visual inspection prior to testing, and items found during the testing program as follows:

1. Prior to environmental testing

- a. Incorrect Valve Assembly -- Examination found an off-center insulating washer wedged in the land between the pressure housing and the lower case of the reed switch housing. This prevented pressure from the assembly nut being transmitted to the bottom of the solenoid housing and the lower O-ring seal. The misalignment was corrected.

JEW
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- b. Significant Missing Parts -- The delivered valves lacked O-ring seals on both valves [5] and [6]. In addition, rubber grommets protecting the solenoid leads from chafing by the housing were missing on valves [17] and [18]. The missing O-rings were replaced.

2. Attributed to environmental testing program

- a. Limit switch valve position indicator failures, due to improper curing within the reed switch assembly.
- b. Valve Failed to Open -- About 75% through the seismic test, valve [5] failed to open due to an electrical short in the solenoid. On disassembly, the solenoid was observed to be free to move in all directions.

The lead wires of the other valve tested [18] were also damaged to the extent of exposing the conductors, but they had not as yet come into contact either with each other or with the housing, where the grommet was missing.

- c. Valve Failed to Close -- Although valve [18] was still operating electrically at termination of the test, it was unable to seat properly in the closed position because the soft seat ring had started to come out of its retention groove in the end of the plunger.

II. Analysis of Safety Implications

C-E has reviewed the impact of the reported condition and has determined the following:

"Failure of the Safety Injection Tank (SIT) Valve does not present a significant safety hazard because shutdown and depressurization can be accomplished without it. Removal of SIT from service for repair is also permitted by the technical specification."

"Failure of the Pressurizer Auxiliary Spray Valves could present a significant safety hazard because, in the Palo Verde design, these valves play a vital role in the principal path to cold shutdown for accident situations involving extended loss of off-site power".

Based on the above, this condition is evaluated as reportable under the requirements of 10CFR50.55(e), since if the Pressurizer Auxiliary Spray valves defects were to remain uncorrected, it would represent a significant safety condition. C-E has subsequently reported this condition under the requirements of 10CFR Part 21.

III. Corrective Action

- A. C-E letter V-CE-19075 provides the corrective action for modifications of the existing solenoid operators (Top Works) for the Model 77L-001 (Target Rock) one-inch Safety Injection Tank Vent valves for all 3 Units. The modifications are based on acceptance of Target Rock requalification testing in accordance with the requirements of NUREG-0588. The valves are identified by the following unit tag numbers:

1JSIAHV605	2SIAHV605	3SIAHV605
1JSIAHV606	2SIAHV606	3SIAHV606
1JSIAHV607	2SIAHV607	3SIAHV607
1JSIAHV608	2SIAHV608	3SIAHV608
1JSIBHV613	2SIBHV613	3SIBHV613
1JSIBHV623	2SIBHV623	3SIBHV623
1JSIBHV633	2SIBHV633	3SIBHV633
1JSIBHV643	2SIBHV643	3SIBHV643

C-E has submitted revised Target Rock Test Plan TP-ESE-024, Rev. 1 (Log N001-1.01-351-2) and Target Rock Modification Report No. 3862 to support ongoing qualification for NUREG-0588.

Bechtel will implement the required modifications to the T/R Solenoid operators by the following Design Change Packages prior to fuel load in each Unit:

ISM-SI-301 2SM-SI-301 3CM-SI-301

C-E will submit revised drawings, manuals and qualification documentation as required.

- B. The corrective action required for the two-inch Pressurizer Spray Valves is as follows:
- ° Replace existing Unit 1 Model 77L-003 Target Rock solenoid operators with Unit 2 refurbished solenoid operators of the same model (Tag numbers 1JCHAHV205 and 1CHBHV203). This will be an interim solution to support PVNGS Cycle 1* scheduled requirements. Final disposition will be determined on availability of modified Model 77L-003 solenoid operators or replacement available Valcor Model V526-563-9 two-inch solenoid valves.
 - ° Replace all Units 2 & 3 Target Rock Model 77L-003 two-inch solenoid valves with Valcor two-inch solenoid valves Model V562-563-9, obtained from Tennessee Valley Authority (TVA). C-E states that Valcor is qualified for 40-year life and replacement was based on supporting construction schedule.

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The Valcor valves will assume the following unit tag numbers:

2JCHAHV205	3JCHAHV205
2JCHBHV203	3JCHBHV203

Bechtel will implement the required valve modifications and valves change-out prior to fuel load in each Unit via the following Design Change Packages:

1SM-CH-307	2SM-CH-307	3SM-CJ-307
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- C. C-E will submit revised drawings, manuals, and qualification documentation, to support corrective action.
- D. C-E has issued Bulletin 82-11 dated November 9, 1982 notifying all utility clients of this deficiency.
- E. Bechtel has identified twelve (12) additional Target Rock solenoid Model 77L (77L-002 and 77L-004) supplied by C-E to PVNGS. These valves are not included in the PVNGS Equipment Qualification (EQ) Program and, therefore, the EQ problems identified in this DER are not applicable. However, Bechtel has issued Investigation Request (IR) No. 18 to inspect the following valves for missing parts:

1JCHNHV526	2JCHNHV526	3JCHNHV526
1JRCEHV403	2JRCEHV403	3JRCEHV403
1JSIBUV659	2JSIBUV659	3JSIBUV659
1JSIAUV660	2JSIAUV660	3JSIAUV660

Any additional NCR's initiated as a result of this activity shall cross reference this DER for reportability.

*Cycle 1 is the first refueling assignment, approximately 18 months from commercial operations.