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AUTH.NAME AUTHOR AFFILIATION
VAN BRUNT,E.E. Arizona Public Service Co.
RECIP.NAME RECIPIENT AFFILIATION
KNIGHTON,G.W. Licensing Branch 3

SUBJECT: Provides addl info re impact of high energy line breaks on control sys,Corresponding draft rev to FSAR Section 3A.10 will be transmitted for review by 831216.

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Arizona Public Service Company
P.O. BOX 21666 • PHOENIX, ARIZONA 85036

November 16, 1983
ANPP - 28239 - WFQ/MSN

Director of Nuclear Reactor Regulation
Attention: Mr George Knighton, Chief
Licensing Branch No. 3
Division of Licensing
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Subject: Palo Verde Nuclear Generating Station (PVNGS)
Units 1, 2, and 3
Docket Nos. STN-50-528/529/530
File: 83-056-026; G.1.01.10

References: (A) NRC letter from G. W. Knighton to E. E. Van Brunt, Jr. (APS), dated September 20, 1983. Subject: Request for Additional Information - Palo Verde.

(B) NRC letter from R. L. Tedesco to E. E. Van Brunt, Jr. (APS), dated March 24, 1981. Subject: Round 1 Questions (FSAR) for Palo Verde Unit Nos. 1, 2, and 3.

Dear Mr. Knighton:

Reference (A) requested additional information regarding:

1. The impact of high energy line breaks on control systems;
2. The exceptions taken in FSAR Section 3.8.1.6.6.1 to Structural Welding Code AWS D1.1-72.

Attached is our response to item (1). A telephone conference call was held on November 9, 1983 between APS personnel and E. A. Licitra and Dave Smith of your staff to discuss item (2). It was agreed that additional information will be provided in FSAR Section 3A.10 (in Amendment 12) to allay your concerns. A draft revision of FSAR Section 3A.10 will be transmitted for your review by December 16, 1983.

If you have any questions regarding this matter, please contact me.

Very truly yours,

E. E. Van Brunt

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

EEVB/MSN/kg
Attachment

cc: E. A. Licitra (w/a)
A. C. Gehr (w/a)

B001
1/1

STATE OF ARIZONA)
) ss.
COUNTY OF MARICOPA)

I, Edwin E. Van Brunt, Jr., represent that I am Vice President, Nuclear Projects of Arizona Public Service Company, that the foregoing document has been signed by me on behalf of Arizona Public Service Company with full authority to do so, that I have read such document and know its contents, and that to the best of my knowledge and belief, the statements made therein are true.

Edwin E. Van Brunt

Edwin E. Van Brunt, Jr.

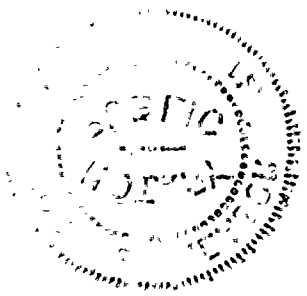
Sworn to before me this 16th day of November, 1983.

Nora E. Meador

Notary Public

My Commission Expires:

My Commission Expires April 6, 1987



ATTACHMENT

RESPONSE TO REQEUST FOR ADDITIONAL INFORMATION
ON PVNGS HELB/CONTROL SYSTEM MALFUNCTIONS

NRC Question:

In response to Q 222.03, the letter of July 1, 1983, from E. E. Van Brunt, Jr. to G. W. Knighton, discussed the impact of high energy line break on control systems. Four control systems failures were identified. Furthermore, it was stated that the "HELB/control system malfunction event consequences are bounded by the event consequences presented in the FSAR." With regard to this response, please provide the following information:

1. Are more than one of the identified HELB induced failures caused by a common HELB? If so, the consequences of these failures should be treated simultaneously with the consequences of the HELB.

2. Which specific FSAR event consequences bound the HELB/control system malfunction(s) identified in the July 1, 1983, letter.

Response to Question 1:

The response to NRC Question 222.03 on Qualification of Control Systems listed four potential HELB/control system interactions which could exacerbate event consequences. Briefly, these are -

1. Failure of the pressurizer pressure control system (PPCS) to de-energize the pressurizer heaters during a loss of coolant accident (LOCA), or steam line break (SLB) event.

2. Failure of the reactor regulating system (RRS) such that CEA's are withdrawn during a LOCA, SLB, or feedwater line break (FWLB) event.

3. Failure of the steam bypass control system (SBCS) such that steam flow is increased during a SLB event.

4. Failure of the pressurizer level control system (PLCS) such that RCS inventory is increased during a FWLB event.

Simultaneous control system failures caused by a common HELB were evaluated. However, the possible combinations were limited by the following considerations.

A detailed design review of the pressurizer heaters concluded that the failure of the PPCS to de-energize the pressurizer heaters will not jeopardize the RCS pressure boundary integrity. Therefore, PPCS failure in conjunction with any other control system failures will not exacerbate event consequences.

In addition, the combined failure of the SBCS and RRS during a SLB event is not credible since there are interlocks within these control systems which prevent simultaneous operation of the two control systems. The only remaining potential failure combination is the failures of the PLCS and RRS during a FWLB event.

An analysis of the failures of the PLCS and RRS during a FWLB event was performed. The results of the study show that the multiple failure event consequences are bound by the FWLB event consequences presented in subsection 15.2.B of the PVNGS FSAR.

Response to Question 2.

The PVNGS FSAR event consequences used for comparison with the HELB/control system interaction analysis are:

1. The SLB event presented in subsection 16.1.5 of the PVNGS FSAR,

2. The FWLB event presented in subsection 15.2.8 of the PVNGS FSAR,

3. The reactor coolant system break outside containment (RCSBOC) presented in subsection 15.6.2 of the PVNGS FSAR, and

4. The LOCA events presented in subsection 15.6.5 of PVNGS FSAR.

The consequences of these events bound the consequences of the HELB/control system malfunctions identified in the July 1, 1983 letter.