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 FACIL: STN-50-528 Palo Verde Nuclear Station, Unit 1, Arizona Publi 05000528  
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 AUTH. NAME AUTHOR AFFILIATION  
 VAN BRUNT, E. E. Arizona Nuclear Power Project (formerly Arizona Public Serv  
 RECIP. NAME RECIPIENT AFFILIATION  
 KNIGHTON, G. W. PWR Project Directorate 7

SUBJECT: Application for amends to Licenses NPF-57<sup>4</sup>, revising Tech Spec  
 Table 3.3.1, "Reactor Protective Instrumentation," to allow  
 facility to remain at power while corrective steps  
 implemented to change setpoint settings. Fee paid.

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## Arizona Nuclear Power Project

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

ANPP-36699 EEVB/JRP/98.05

May 28, 1986

Director of Nuclear Reactor Regulation  
Attention: Mr. George W. Knighton, Project Director  
PWR Project Directorate #7  
Division of Pressurized Water Reactor Licensing - B  
U. S. Nuclear Regulatory Commission  
Washington, D.C. 20555

Subject: Palo Verde Nuclear Generating Station (PVNGS)  
Units 1 and 2  
Docket No. STN 50-528 (License NPF-41)  
Docket No. STN 50-529 (License NPF-51)  
Request for Emergency Technical Specification Change  
File: 86-F-005-419.05; 86-056-026

Reference: Letter from E. E. Van Brunt, Jr., ANPP, to G. W. Knighton, NRC,  
dated May 27, 1986 (ANPP-36693).

Letter from F. Schroeder, Deputy Director Division of PWR  
Licensing-B, USNRC to E. E. Van Brunt, Jr., ANPP, May 28, 1986.

Dear Mr. Knighton:

This letter is provided to request an Emergency Technical Specification change to PVNGS Units 1 and 2 Technical Specification Table 3.3-1; Reactor Protective Instrumentation I.A.7. This change is required expeditiously to allow PVNGS to remain at power while corrective steps are implemented to change setpoint settings. The one-time only change will allow operation with less than the minimum channels operable requirement for ten (10) days provided the conditions listed in Action 9 (Part G) are satisfied.

We understand that this Technical Specification Change will allow continued operation as specified in ACTION 9 to Part G of this letter.

Enclosed within this package request are:

- A. Description of the Proposed Change Request.
- B. Basis for No Significant Hazards Determination.
- C. Justification for the Emergency Classification.
- D. Safety Evaluation of the Proposed Amendment Request.
- E. Environmental Impact Consideration Determination.
- F. Proposed Compensatory Measures.
- G. Marked-up Technical Specification Change Package.

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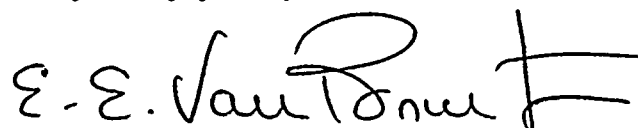
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Mr. George Knighton  
Request for Emergency Technical Specification Change  
ANPP-36699  
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In accordance with 10CFR Part 170.12(c), the license amendment application fee of \$150 is also enclosed.

If you have any questions, please call.

Very truly yours,

A handwritten signature in dark ink, appearing to read "E. E. Van Brunt, Jr.", with a stylized flourish at the end.

E. E. Van Brunt, Jr.  
Executive Vice President  
Project Director

EEVB/WFQ/dlk  
Enclosure

cc: Director Region V, USNRC  
NRC Project Manager - E. A. Licitra  
NRC Resident Inspector - R. P. Zimmerman  
A. C. Gehr  
C. E. Tedford, Director Arizona Radiation Regulatory Agency



#### A. DESCRIPTION OF PROPOSED AMENDMENT REQUEST

The proposed amendment is a one-time exemption to Technical Specification 3.0.3 which addresses general timing requirements upon entry into an ACTION statement. The proposed one-time amendment would allow corrective action to be taken without plant shutdown (Part G).

Examination of setpoint calculations associated with the low reactor coolant flow trip (Table 2.2-1) shows that the assumed range of differential pressures was different from measured plant values. As a result, the calculated BAND and RATE setpoints are not conservative. However, the FLOOR setpoint, as calculated, will provide protective action within the timing assumptions of the safety analyses. We wish to emphasize that the problem is only associated with assumed differential pressures vs. measured differential pressures and does not imply inadequate RCS flow. Independent measurements have confirmed that the total RCS flow rate is in excess of that required by Technical Specification 3/4.2.5. RCS flow rate is accurately measured by reactor coolant pump speed which was calibrated against an ultrasonic flow measuring device.

Since the RATE and BAND setpoints are outside of Table 2.2-1, Technical Specification 3.0.3 requires correction within 1 hour or be in hot standby within the next 6 hours. Since the existing FLOOR setpoint provides plant protection within safety analysis assumptions as the units are operating in an analyzed and safe condition, shutdown should not be required to correct the setpoints associated with the low reactor coolant flow trip.

#### B. BASIS FOR NO SIGNIFICANT HAZARDS DETERMINATION

The proposed change does not involve a significant hazards consideration because operation of Palo Verde Units 1 and 2 in accordance with this change would not:

- 1) Involve a significant increase in the probability or consequences of an accident previously evaluated. This change allows corrective action to be taken without plant shutdown. The corrective action involves the low reactor coolant flow trip setpoints. This trip is necessary for protection against reactor coolant pump shaft breaks. Existing safety analysis assumptions are preserved by FLOOR value for RCP flow trip.
- 2) Create the possibility of a new or different kind of accident from any previously analyzed. One of the three existing setpoints in the low reactor coolant flow trip will provide protective action within the timing required by the existing accident analyses. Since protective action is provided as required by existing analyses, the possibility of a new or different kind of accident will not be created.
- 3) Involve a significant reduction in a margin of safety. The Technical Specification setpoints in Table 2.2-1 for the low reactor coolant flow trip are in terms of percent full flow differential pressure. The range





of differential pressures expected at full flow was assumed to be between 22.5 psid and 30 psid when the setpoints were calculated. The measured differential pressures range between 18.5 psid and 26 psid. The result of this difference places two of the setpoints outside the values established in Table 2.2-1. The third setpoint is more conservative than required and thus provides the margin of safety intended from the other two setpoints.

The Commission has provided guidance concerning the application of the standards for determining whether a significant hazards consideration exists. The proposed change is similar to example (ix), Other: temporary relief from existing restrictions.

#### C. JUSTIFICATION FOR EMERGENCY CLASSIFICATION

During an investigation on May 27, 1986, of channel trips that occurred on Unit 2 on May 21st, 1986 associated with the low reactor coolant flow trip, it was discovered that two of the three parameters set in the trip were outside of Technical Specification Table 2.2-1.

The requested relief will allow PVNGS to remain at power while corrective steps are implemented. The Emergency Technical Specification change is necessary to avoid shutdown of Units 1 and 2. In order to achieve the above, a suspension of the pre-noticing requirements of 10CFR Part 50.91 is required and expeditious granting of the proposed one-time only change be effected.

#### D. SAFETY EVALUATION OF THE PROPOSED AMENDMENT REQUEST

The design basis for the low reactor coolant flow trip is the Reactor Coolant Pump Sheared Shaft Event and the Main Steam Line Break with a Loss of Offsite Power. The probability of each of these events occurring is independent of the specific trip function credited to provide protection for these events. Therefore, the probability of occurrence of these events is not affected by this change. The consequences of any of these accidents is not increased since the required protective action is still provided within the analyzed time frames.

Because the change does not involve a change to the plant design or the manner in which the plant is operated and the current analyses in the FSAR remain valid, the possibility of any new accident or malfunction is not created.

The low reactor coolant flow trip involves three setpoints, BAND, RATE, and FLOOR, since this trip is a rate limited variable setpoint trip. The trip will activate whenever the flow, as measured by a steam generator differential pressure, is a fixed percentage below the nominal value. This fixed percentage is the BAND. As the nominal differential pressure varies, so will the setpoint, as long as the RATE is not exceeded. The setpoint will never be less than the FLOOR.



The full flow differential pressure was assumed to be within a range of 22.5 psid to 30 psid. The actual setpoints are calculated using the appropriate differential pressure limit and the technical specification percentage. The RATE and BAND use the lower limit differential pressure. The FLOOR uses the upper limit differential pressure.

The actual range of full flow differential pressures has been observed to range from about 18.5 psid to 26 psid. Therefore, the existing setpoints for RATE and BAND are not conservative for differential pressures below 22.5 psid. For the same reason, the FLOOR is more conservative than necessary if the differential pressure is less than 30 psid.

In Table 1, the first column is the Technical Specification value expressed in percent of full flow steam generator differential pressure. The second column shows a conversion of the percentage values to psi values (using the range of steam generator differential pressures assumed in the setpoint calculation). These psi values are converted to voltages before implementation in the plant protection system. The third column shows what the values would be if the range of steam generator differential pressures measured at the plant were used for the conversion. As was mentioned previously, the FLOOR uses the high value in the range and the BAND and RATE use the low values.

TABLE 1

	<u>Technical Specification Value</u>	<u>Δ P Values With 22.5 - 30.0 psi Range</u>	<u>Δ P Values With 18.5 - 26 psi Range</u>
FLOOR	52.2%	15.66 psi <sup>(1)</sup>	13.57 psi
BAND	40%	9.0 psi <sup>(2)</sup>	7.4 psi
RATE	1.05%/sec	.236 psi/sec <sup>(3)</sup>	.194 psi/sec

(1)  $15.66 = .522 \times 30.0$

(2)  $9.0 = .40 \times 22.5$

(3)  $.236 = .0105 \times 22.5$

The events that provide the design basis for the low reactor coolant flow trip are the Reactor Coolant Pump Sheared Shaft and Main Steam Line Break with Loss of Offsite Power. The current analyses assume protection is provided entirely by the BAND and RATE functions, with no credit given for the FLOOR function. The current RATE and BAND values are valid on any channel where the actual full flow falls within the values assumed in the setpoint calculation, 22.5 psi to 30 psi.



The two design basis events were evaluated to determine if the current FLOOR value of 15.66 psi would provide the required trip. It was determined that the FLOOR setting would provide trips in times that are consistent with the current analyses of record. A simple example can illustrate why this occurs.

Assume that a channel is measuring a differential pressure of 20 psi. The current FLOOR setting is 15.66 psi. The new BAND setting would be 7.4 psi (Table 1). Thus, a corrected trip setpoint would be given by the measured value (20) minus the new BAND value:

$$20 - 7.4 = 12.6 \text{ psi}$$

since the existing FLOOR value is above this (15.66 psi) the trip will actually be generated by the FLOOR prior to the required BAND value. The complete evaluation of the FLOOR provides the required protection considering all sources of error appropriate for each of the design basis events.

Thus, with the existing setpoints the FLOOR value will provide a trip within the time required by the current Chapter 15 Safety Analyses. Also, with the new setpoint values, all three values, RATE, BAND, and FLOOR will be within the Technical Specification Requirements, and thus protection will be assured consistent with the current Chapter 15 Safety Analyses.

In addition, we wish to point out that this trip is a backup trip for the Main Steam Line Break, with the CPC's providing primary protection. For the Reactor Coolant Pump Sheared Shaft event, the low reactor coolant flow trip is the primary trip. No backup trip is explicitly analyzed but the plant could trip on Low-DNBR or high pressurizer pressure.

Therefore, based on the above considerations, ANPP has determined that this change does not involve a significant hazards consideration.

#### E. ENVIRONMENTAL IMPACT CONSIDERATION DETERMINATION

The proposed amendment request does not involve an unreviewed environmental question because operation of PVNGS Units 1 and 2 in accordance with this change would not:

1. Result in a significant increase in any adverse environmental impact previously evaluated in the Final Environmental Statement (FES) as modified by the staff's testimony to the Atomic Safety and Licensing Board, Supplements to the FES, Environmental Impact appraisals, or in any decisions of the Atomic Safety and Licensing Board; or
2. Result in a significant change in effluents or power levels; or
3. Result in matters not previously reviewed in the licensing basis for PVNGS which may have a significant environmental impact.



F. PROPOSED COMPENSATORY MEASURES

There are no other compensatory measures proposed which are not already cited in the request for change. After evaluation of the existing condition by the NSSS vendor and ANPP, it has been determined that the FLOOR setting will provide adequate protection consistent with the safety analyses assumptions.

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1. The first part of the report is a general  
description of the project and its objectives.  
2. The second part is a detailed description of the  
methodology used in the study.

"The results of the study are presented in the third part of the report."



G. PROPOSED ONE-TIME ONLY TECHNICAL SPECIFICATION CHANGE

I N S E R T

ACTION 9 - a one-time only change will allow that with the number of channels operable two or more less than the Minimum Channels Operable requirement, POWER OPERATION may continue for 10 days beginning 7:00pm MST May 29, 1986 provided the following conditions are satisfied:

- a. Only the RATE and BAND values are outside the LCO values defined in Table 2.2-1,
- b. The FLOOR value provides the required protection as defined by the basis for this trip function.

Subsequent POWER OPERATION may continue provided sufficient channels are restored to operable status to meet the requirements of ACTION 2 or ACTION 3.

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