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 RECIP. NAME RECIPIENT AFFILIATION  
 Document Control Branch (Document Control Desk)

SUBJECT: Requests changes to Tech Spec Section 3.3.3.2; limiting  
 condition for operation, incere detector instrumentation &  
 Sections 3.9.1 & 3.10.1, action statement, to alleviate  
 potential problems & change flow requirement, respectively.

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## Arizona Nuclear Power Project

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

May 28, 1987  
161-00244-JGH/JRP

U.S. Nuclear Regulatory Commission  
ATTN: Document Control Desk  
Washington, D.C. 20555

Subject: Palo Verde Nuclear Generating Station (PVNGS)  
Unit 1  
Docket No. STN 50-528 (License NPF-41)  
Technical Specification Changes  
File: 87-F-005.419.05; 87-056-026

Dear Sir:

This letter is provided to request two changes to the PVNGS Unit 1 Technical Specifications. The request consists of the following proposed changes:

Specification Section 3.3.3.2; Limiting Condition for Operation, Incore Detector Instrumentation. The proposed changes to the operability of the incore detectors would alleviate potential problems with the present requirement that two quadrant - symmetric sets of detector locations must be operable.

Specification Sections 3.9.1 and 3.10.1, Action Statement. The action statements for Technical Specifications 3.9.1 and 3.10.1 currently require boration at a flowrate greater than or equal to 40 gpm when the associated Limiting Condition for Operation is not met. This amendment will change the flow requirement from 40 gpm to 26 gpm. This change will revise the Technical Specifications to be in accordance with the actual design of the charging system.

The changes presented herewith were previously discussed with and agreed to by the staff during the PVNGS Unit 2 and 3 Technical Specification review process and have been incorporated into the Unit 2 and 3 operating license.

Enclosed within this amendment request(s) are:

- A. Description of Amendment Request
- B. Purpose of the Technical Specification
- C. Need for the Specification Amendment
- D. Basis for No Significant Hazards Consideration
- E. Safety Analysis of the Proposed Change Request
- F. Environmental Impact Consideration Determination
- G. Marked-Up Technical Specification Change Pages

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USNRC Document Control Desk  
Technical Specification Change  
to LCO Section 3.0.3  
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Pursuant to 10CFR50.91(b)(1), and by copy of this letter and attachment, we have notified the Arizona Radiation Regulatory Agency of this request for a Technical Specification change. In accordance with 10CFR170.12(c), the License Amendment application fee of \$150.00 has been forwarded to the USNRC License Fee Management Coordinator.

If you have any questions please call R. A. Bernier at (602) 371-4295.

Very truly yours,



J. G. Haynes  
Vice President  
Nuclear Production

JGH/JRP/ljs  
Attachment

cc: O. M. De Michele  
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G. W. Knighton (w/a)  
J. B. Martin (w/a)  
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R. P. Zimmerman (w/a)  
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A. C. Gehr (w/a)

SECTION 3.3.3.2

A. DESCRIPTION OF AMENDMENT REQUEST

The proposed change in Technical Specification Section 3.3.3.2 is to alter the definition of an operable string so that a string is considered operable with up to 2 failures, or equivalently, with at least 3 operable detectors. This is consistent with the definition of an operable string on plants with only 4 detectors in a string. In order to ensure that this does not allow a large number of failures, Technical Specification Section 3.3.3.2a has been modified to require that, at least 75% of the detectors be operating. Further, to ensure that all parts of the core are instrumented, at least one detector is required in every quadrant at every level.

B. PURPOSE OF THE TECHNICAL SPECIFICATION

The purpose of this Technical Specification is that the operability of the incore detectors with the specified minimum complement of equipment ensures that the measurements obtained from use of this system accurately represent the spatial neutron flux distribution of the reactor core. The function of the incore detectors is as follows:

- ° Determine the gross power distribution in the core at different operating conditions.
- ° Provide data to estimate the fuel burnup in each assembly.
- ° Provide information to guide the operation of control element assemblies to:
  - Control spatial xenon oscillations,
  - Ensure power peaking factors do not exceed limits.
- ° Provide data for the evaluation of thermal limits in the core.
- ° Provide data to be used to check that core power distribution is consistent with calculated values.

C. NEED FOR THE TECHNICAL SPECIFICATION AMENDMENT

Technical Specification Section 3.3.3.2 currently requires at least 75% of all incore detector locations, and a minimum of two quadrant-symmetric incore detector locations per core quadrant be operable. A change in the Technical Specifications on the operability of incore detectors would alleviate potential problems with the present requirement that two quadrant-symmetric sets of detector locations must be operable.

Since the Palo Verde units have only two quadrant-symmetric sets of detectors, even a single location failure would place the plant in technical non-compliance with the Technical Specifications. The change is consistent with the COLSS and CECOR uncertainty analysis.

The basis of the change is to declare that a string and location is operable with three operable detectors, or conversely, with up to two failed detectors.





D. BASIS FOR NO SIGNIFICANT HAZARDS CONSIDERATION DETERMINATION

1. The Commission has provided standards for determining whether a significant hazards consideration exists as stated in 10 CFR 50.92. A proposed amendment to an operating license for a facility involves no significant hazards consideration if operation of the facility in accordance with a proposed amendment would not: (1) Involve a significant increase in the probability or consequences of an accident previously evaluated; or (2) Create the possibility of a new or different kind of accident from any accident previously evaluated; or (3) Involve a significant reduction in a margin of safety.

A discussion of these standards as they relate to the amendment request follows:

Standard 1--Involve a significant increase in the probability or consequences of an accident previously evaluated.

The proposed change does not involve a significant increase in the probability or consequences of an accident previously evaluated because the change does not alter the current design of the facility. The Technical Specifications are being changed to agree with the actual design and operations of the plant. The data in the CECOR Topical, (CENPD-153P) support a total number of instrument failures of up to 25%, and detector string operability levels as low as 75%, where operability is defined as having three or more working instruments per detector string.

A tilt estimate at any level can be made from three detectors in a quadrant-symmetric set of four or two pairs of symmetric detectors. The current Technical Specifications allow a minimum of six tilt estimates. By amending the Technical Specifications, this clarifies the requirement and provides for duplication for at least three levels. Further, by requiring an operating detector in every quadrant at every level, no part of the core will be uninstrumented.

The Technical Specification changes are consistent with the data base and uncertainties presented in the CECOR Topical. In addition, the requirements for 75% operating detectors, six tilt estimates with at least one at each of three levels, and the requirement for a detector at each level satisfy the basis for COLSS operability. Based on this information it has been determined that this change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

Standard 2--Create the possibility of a new or different kind of accident from any accident previously evaluated.

The proposed amendment will not create the possibility of a new or different kind of accident from any accident previously evaluated. The proposed change does not vary, affect or provide any physical changes to

the facility. This proposed change only revises the Technical Specifications to alter the definition of an operable string so that a string is considered operable with up to 2 failures, or equivalently, with at least 3 operable detectors. This is consistent with the definition of an operable string on plants with only four detectors in a string. In order to ensure that this does not allow a large number of failures, specification 3.3.3.2a has been modified to require that, at least 75% of the detectors be operating. Further, to ensure that all parts of the core are instrumented, at least one detector is required in every quadrant at every level.

In order to make a tilt estimate at any detector level, at least three of four quadrant-symmetric pairs of instruments must be operating. The current Technical Specification in effect requires a minimum of 6 tilt estimates. The revised specifications, 3.3.3.2b states this explicitly and further requires that at least one tilt estimate be available at three levels to ensure redundancy and core coverage. The requirement on at least one detector per quadrant per level further guarantees that all parts of the core are seen, therefore, this change will not create the possibility of a new or different kind of accident from any accident previously evaluated.

Standard 3--Involve a significant reduction in a margin of safety.

The proposed amendment does not involve a significant reduction in a margin of safety because the change does not affect the design basis of the plant. The revised Technical Specifications are consistent with the data base included in the approved CECOR Topical. The three reactor cycles in the Topical with the most detector failures have been examined. In particular, the total number of instrument failures, the number of string rendered inoperable (ie., having fewer than 3 working detectors), and the number of strings with 3 or less operating detectors have been recorded. Simulation test cases with instrument failures extrapolated to the limits in the revised Technical Specifications have been run previously. The results show no deterioration in the uncertainties beyond the current values. All values are well below those in the approved Topical. The change as presented here does not involve a significant reduction in a margin of safety.

2. The proposed amendment matches one of the examples given in 51 FR 7751 of amendments that do not involve a significant hazards consideration. Specifically (ix; Other): the proposed amendment is a change to the definition of an operable string so that a string is considered operable with up to two failures.

#### E. SAFETY ANALYSIS OF THE PROPOSED CHANGE REQUEST

The proposed Technical Specification change will not increase the probability of occurrence or the consequences of an accident or malfunction of equipment important to safety previously evaluated in the FSAR. This change is in accordance with the previously evaluated design of the facility. The proposed changes are consistent with the data base and uncertainties presented in the CECOR Topical. In addition, the requirements for 75% operating detectors, six tilt estimates with at least one at each of three levels, and the requirement for a detector at each level satisfy the basis for COLSS operability.



.. . The proposed Technical Specification change will not create the possibility for an accident or malfunction of a different type than any evaluated previously in the FSAR. No physical changes are being made to the facility and this change only revises the Technical Specifications to reflect the actual design and operation of the facility.

The proposed Technical Specification change will not reduce the margin of safety as defined in the basis for any Technical Specification. The basis for Technical Specifications 3.3.3.2a and 3.3.3.2b are to ensure that the measurements obtained from use of this system accurately represent the spatial neutron flux distribution of the reactor core. This change does not affect these basis since assurance is provided that all values are well below those in the approved Topical. Therefore, the proposed Technical Specification changes are supported by the approved CECOR Topical uncertainties.

F. ENVIRONMENTAL IMPACT CONSIDERATION DETERMINATION

The proposed change request does not involve an unreviewed environmental question because operation of PVNGS Unit 1 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.

G. MARKED-UP TECHNICAL SPECIFICATION CHANGE PAGES

(see attached page 3/4 3-41)

REFERENCE

Johnson, W. B. Terney, M. W. Crump, "INCA/CECOR Power Peaking Uncertainty", CENPD-153-P, Revision 1-P-A, May, 1980