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SUBJECT: Application for amends to licenses NPF-41, NPF-51 & NFP-74, respectively, changing Sections 1.10 & 3.2.8 & associated Bases for obtaining thyroid DCF used in definition of Dose Equivalent I-131.

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10 CFR 50.90

Arizona Public Service

PALO VERDE NUCLEAR GENERATING STATION
P.O. BOX 52034 PHOENIX, ARIZONA 85072-2034

102-03717-WLS/AKK/NLT
June 17, 1996

WILLIAM L. STEWART
EXECUTIVE VICE PRESIDENT
NUCLEAR

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Mail Station P1-37
Washington, DC 20555-0001

Dear Sirs:

**Subject: Palo Verde Nuclear Generating Station (PVNGS)
Units 1, 2, and 3
Docket Nos. STN 50-528/529/530
Proposed Amendment to Technical Specification
Sections 1.10 and 3.2.8 and the Associated Bases**

Pursuant to 10 CFR 50.90, Arizona Public Service Company (APS) submits herewith a proposed amendment to Technical Specification (TS) Sections 1.10, Definition of Dose Equivalent I-131, and 3.2.8, Pressurizer Pressure, and the associated bases. The proposed amendment to TS 1.10 would change the reference for obtaining the thyroid dose conversion factors (DCFs) used in the definition of Dose Equivalent I-131. The proposed amendment to TS 3.2.8 would change both the upper and lower limits for the pressurizer pressure in Modes 1 and 2.

The proposed change to the definition of Dose Equivalent I-131 would replace the reference to Table III of TID-14844, "Calculation of Distance Factors for Power and Test Reactor Sites," with a reference to International Commission on Radiological Protection, Publication 30 (ICRP-30), Supplement to Part 1, page 192-212, table titled, "Committed Dose Equivalent in Target Organs or Tissues per Intake of Unit Activity," as the source document for obtaining the DCFs to be utilized in dose calculations. This change will effectively reduce calculated dose consequences by approximately 20 percent, thereby providing additional design margin when performing reload analyses. The cycle-specific reload analyses will ensure that the net effect of utilizing this resulting design margin is dose consequences which are less than or equal to current licensing bases dose consequences.

The proposed amendment would also change the upper and lower limits for normal operating pressurizer pressure from 2300 psia to 2295 psia, and 2025 psia to 2130 psia, respectively. The new limits account for new instrument uncertainties as well as reduce the allowed operating band. These more restrictive initial conditions will facilitate utilization of bounding safety analyses for some events previously analyzed on a cycle-specific basis, which will allow for more flexibility in fuel management for future cycles.

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U. S. Nuclear Regulatory Commission
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Proposed Amendment to TS Sections 1.10
and 3.2.8, and Associated Bases
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Provided in the enclosure to this letter are the following:

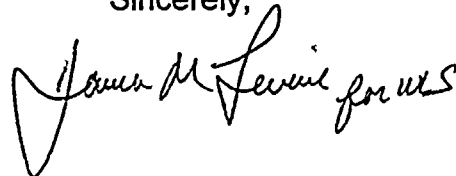
- A. Description of the Proposed Amendment
- B. Purpose of the Technical Specification
- C. Need for the Technical Specification Amendment
- D. Safety Analysis of the Proposed Technical Specification Amendment
- E. No Significant Hazards Consideration Determination
- F. Environmental Consideration
-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

In accordance with TS Section 6.5, the Plant Review Board and Offsite Safety Review Committee have reviewed and concur with this proposed amendment. Pursuant to 10 CFR 50.91(b)(1), a copy of this request has been forwarded to the Arizona Radiation Regulatory Agency.

Approval of this proposed amendment is requested by November 1, 1996, in order to be implemented prior to the startup of PVNGS Unit 1 Cycle 7 from refueling outage 6. It is requested that this proposed amendment become effective within 45 days of issuance by the NRC for PVNGS Units 1, 2, and 3.

Should you have any questions, please contact Scott A. Bauer at (602) 393-5978.

Sincerely,



WLS/AKK/NLT/pv

Enclosure

cc: L. J. Callan
K. E. Perkins
J. W. Clifford
K. E. Johnston
A. V. Godwin

(ARRA)



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STATE OF ARIZONA)
) ss.
COUNTY OF MARICOPA)

I, J. M. Levine, represent that I am Vice President - Nuclear Production, Arizona Public Service Company (APS), that the foregoing document has been signed by me on behalf of APS with full authority to do so, and that to the best of my knowledge and belief, the statements made therein are true and correct.


J. M. Levine

Sworn To Before Me This 17th Day Of June, 1996.



Notary Public

My Commission Expires

August 29, 1999



ENCLOSURE

**PROPOSED AMENDMENT TO
TECHNICAL SPECIFICATIONS**

1.10 AND 3.2.8 AND ASSOCIATED BASES

A. DESCRIPTION OF THE PROPOSED AMENDMENT

TECHNICAL SPECIFICATION 1.10

The proposed amendment to Technical Specification (TS) 1.10 would change the source for obtaining thyroid dose conversion factors (DCFs) used in the definition of Dose Equivalent I-131. Currently, TS 1.10 requires the use of Table III of TID-14844, "Calculation of Distance Factors for Power and Test Reactor Sites," for obtaining DCFs. The proposed change would reference International Commission on Radiological Protection Publication 30 (ICRP-30), Supplement to Part 1, page 192-212, table titled, "Committed Dose Equivalent in Target Organs or Tissues per Intake of Unit Activity," as the source document for obtaining the DCFs.

TECHNICAL SPECIFICATION 3.2.8

The proposed amendment to TS 3.2.8 would change both the upper and lower limits for the pressurizer pressure in Modes 1 and 2. The upper limit would be reduced from 2300 psia to 2295 psia to accommodate an increase in pressure transmitter instrument uncertainty. The lower limit would be increased from 2025 psia to 2130 psia. The change in the lower limit would facilitate utilization of bounding safety analyses for future cycles for some events typically analyzed on a cycle-specific basis and provide more fuel management flexibility. The change in the lower limit also accounts for the new instrument uncertainty.

A change to TS 3.2.8 Bases is proposed to clarify that the values proposed for this TS are indicated values and include consideration of instrument uncertainties.

B. PURPOSE OF THE TECHNICAL SPECIFICATION

TECHNICAL SPECIFICATION 1.10

The calculation of dose consequences from radioactive releases at a nuclear power plant evaluates the radiation exposure to the thyroid. A key parameter needed to evaluate the radiological impact is the dose conversion factor. These factors enable the conversion of activity (in Ci/unit mass of volume) into dose equivalent to an organ (which is energy deposited in tissues, usually in units of Rem). The limit on DOSE EQUIVALENT I-131 ensures the 2-hour thyroid dose to an individual at the site boundary during a design basis accident will be within the limits promulgated in the Code of Federal Regulations, 10 CFR 100. The DEFINITION of DOSE EQUIVALENT I-131 provides information on the isotopic mixture that must be considered, as well as the DCFs which must be utilized,

when calculating the thyroid dose associated with TS 3.4.7 for Reactor Coolant System (RCS) Specific Activity which limits the allowable concentration level of radionuclides in the reactor coolant.

TECHNICAL SPECIFICATION 3.2.8

The safety analyses for normal operating conditions and anticipated operational occurrences assume initial conditions within the allowed steady state envelope. The Limiting Condition for Operation (LCO) limits provided in TS 3.2.8 for minimum and maximum RCS pressures, as measured at the pressurizer, ensure that the actual value of pressurizer pressure is maintained during normal operation within the range of values used in the safety analysis, thereby providing assurance that the minimum departure from nucleate boiling ratio (DNBR) will meet the required criteria for each of the transients analyzed.

C. NEED FOR THE TECHNICAL SPECIFICATION AMENDMENT

TECHNICAL SPECIFICATION 1.10

Numerous improvements in obtaining data on decay schemes and half-lives, some refinement to the effective energy terms, and the availability of more physical data for iodine and dose to the thyroid have resulted in more accurate DCFs. The proposed amendment to TS 1.10 would allow the utilization of more accurate DCFs when calculating the dose consequences associated with RCS activity levels and postulated design basis events.

ICRP-30 is recognized in Revision 1 of NUREG-1432, "Standard Technical Specifications, Combustion Engineering Plants," as an acceptable source document for DCFs. Utilization of the ICRP-30 DCFs will reduce calculated dose consequences by approximately 20 percent, thereby providing additional design margin and fuel management flexibility when performing reload analysis. The net effect of utilizing the resulting design margin will be dose consequences which are less than or equal to current licensing bases dose consequences. Cycle-specific reload analyses will ensure that current licensing basis dose consequences are not exceeded.

TECHNICAL SPECIFICATION 3.2.8

The proposed amendment to TS 3.2.8 would change both the upper and lower limits for the pressurizer pressure in Modes 1 and 2. The upper limit will be reduced from 2300 psia to 2295 psia to accommodate an increase in pressure

transmitter instrument uncertainty. The lower limit will be increased from 2025 psia to 2130 psia. The change in the lower limit will facilitate utilization of bounding safety analyses for future cycles. This will minimize the need for some events to be analyzed on a cycle-specific basis and provide more flexibility in fuel management when performing reload analyses. The change in the lower limits also accounts for the new instrument uncertainty. The safety analysis analytical values will be 2325 and 2100 psia, respectively. A change to TS 3.2.8 Bases is proposed to clarify that values proposed for this TS are indicated values and include consideration of instrument uncertainties.

The current pressurizer pressure upper and lower safety analysis analytical limits are 2325 psia and 2000 psia, respectively. These were the analytical limits from which TS 3.2.8 LCO values were derived, which allows for 25 psia uncertainty. TS Bases 3.2.8 currently states that the specification ensures that the actual value of pressurizer pressure is maintained within the range of values used in the safety analyses. Surveillance procedures for verifying compliance of TS 3.2.8 previously used 2025 to 2300 psia as the acceptance range which included the total loop uncertainty including the pressure indicator.

Pressure transmitter uncertainty has increased due to a change to the transmitter temperature effect specification communicated to ITT Barton users in an Industry Advisory Letter dated September 14, 1995. The original uncertainty specification due to transmitter temperature variation was ± 1 percent of full span per 100°F. The new specification includes an additional 3 psi of uncertainty per 100°F. When the additional transmitter bias is accounted for, the loop uncertainty results are $\pm 28.2/-28.1$ psia, which is greater than the allowed 25 psia value. Surveillance procedures have already been revised to incorporate a new acceptance range 2030 to 2295 psia to be used in verifying compliance with the current TS 3.2.8.

The additional transmitter temperature effect uncertainty had no additional impact on the ability of the pressurizer pressure instrument loop to adequately monitor associated system variables, or perform applicable safety related functions.

Safety analyses assumptions for pressurizer pressure for the current operating cycles in all 3 units bound this change and thus this change can be implemented at any time. Future safety analyses, beginning with Unit 1, Cycle 7, will assume the more restrictive setpoints.

A change to TS 3.2.8 Bases is proposed to clarify that the values proposed for this TS are indicated values and include consideration of instrument uncertainties.

D. **SAFETY ANALYSIS OF THE PROPOSED TECHNICAL SPECIFICATION AMENDMENT**

TECHNICAL SPECIFICATION 1.10

Numerous improvements in obtaining data on decay schemes and half-lives, some refinement to the effective energy terms and the availability of more physical data for iodine and dose to the thyroid, has resulted in more accurate DCFs. The proposed amendment to TS 1.10 would allow the utilization of ICRP-30 which provides more accurate DCFs for the purpose of determining the dose consequences associated with RCS activity levels and postulated design basis events.

ICRP-30 is recognized in Revision 1 of NUREG-1432 as an acceptable source document for DCFs. Utilization of the ICRP-30 DCFs will effectively reduce calculated dose consequences by approximately 20 percent, thereby providing additional safety analysis margin. This margin will be used when performing cycle-specific reload analyses ensuring that the overall dose consequences will be less than or equal to currently licensed limits.

There were two predominate sources for DCFs which were utilized by the industry during the time that PVNGS was licensed: Technical Information Document (TID)-14844, and Regulatory Guide 1.109. When PVNGS was licensed, the Combustion Engineering Standard TS (NUREG-0212) referenced only TID-14844 as the source for DCFs. Currently there are three sources for DCFs widely used in the industry: TID-14844 (1962), Reg Guide 1.109 (1977), and ICRP-30 (1980). These three sources are currently referenced in NUREG-1432.

Regulatory Guide 1.4, "Assumptions Used for Evaluating the Potential Radiological Consequences of a Loss of Coolant Accident for Pressurized Water Reactors," references ICRP-2 as an acceptable source for DCFs. ICRP-2 is the basis for Reg Guide 1.109, "Calculation of Annual Doses to Man from Routine Releases of Reactor Effluents for the Purpose of Evaluating Compliance with 10 CFR Part 50, Appendix I," and was also used as the basis for the initial promulgation of 10 CFR 20. Subsequently, 10 CFR 20 was rewritten to utilize ICRP-30 which established a new set of DCFs. As stated in Federal Register, Volume 51, No 6, dated Thursday, January 9, 1986, which proposed the change to 10 CFR 20:

"The intent of the revision is to improve NRC radiation protection standards by reflecting development in the

principles that underlie radiation protection standards and advances in related sciences that have occurred since the promulgation of 10 CFR Part 20 nearly thirty years ago. In particular the revision would put into practice many of the more recent recommendations of the International Commission on Radiological Protection (ICRP) set forth in ICRP Publications 26, 30, 32. The expected result of promulgating and implementing the proposed revised rule is an improved rule that provides better assurance of protection; establishes a clear health protection basis for limits and other regulatory actions taken to protect public health..."

In summary, utilization of the more realistic ICRP-30 (1980) DCFs provides a better assessment of actual dose consequences associated with releases of radioactivity as compared to TID-14844 (1962).

TECHNICAL SPECIFICATION 3.2.8

The requirement of TS 3.2.8 establishes the range of the initial conditions for pressurizer pressure considered for transients analyzed in the safety analyses. In all cases, the safety analyses will show that transients initiated from within the limits of this LCO will meet their respective acceptance criteria.

Transients sensitive to initiation from a minimum pressurizer pressure will have improved results if analyzed with the proposed more restrictive limits. Since transients will be starting at higher pressures, the time it takes to reach the pressurizer pressure trip setpoint will be less which decreases the amount of energy which is accumulated prior to the trip. Similarly, transients evaluated for DNBR will have higher minimum pressure which reduces the potential for boiling, thereby increasing DNBR margin. These improved results can be utilized to develop bounding analyses for some events which are typically evaluated on a cycle-specific basis. The bounding analyses will be used to increase fuel management flexibility. For example, increasing the minimum initial pressure for the Loss of Flow event increases the initial and the minimum DNBR. This added margin can then be used to accommodate a higher radial peaking factor, allowing greater flexibility in fuel management. Other margin setting events which will benefit from a higher initial pressure include CEA Misoperation events (e.g. rod drops and rod withdrawal). The preservation of acceptable accident consequences in accordance with the licensing basis will be assured on a cycle-specific basis by satisfactory performance of the reload analyses.

Based on a review of historical plant operating data for pressurizer pressure, limiting the allowed operating band for pressure will not require additional operator action or create additional burden on the operators. This change will have no impact on operations since nominal operating pressure is approximately 2250 psia and there is only approximately 10 psi deviation from this pressure during normal operation. Additionally, there is no technical basis or need to maintain the existing 275 psi pressurizer pressure band.

Safety analyses assumptions for pressurizer pressure for the current operating cycles in all 3 units bound this change and thus this change can be implemented at any time. Future safety analyses, beginning with Unit 1 Cycle 7, will assume the more restrictive setpoints.

The change to the Bases section is made to clarify that instrument loop uncertainties are included in the LCO values. Safety analysis analytical values bound the LCO values.

E. NO SIGNIFICANT HAZARDS CONSIDERATION DETERMINATION

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 a 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; (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 this amendment request follows:

TECHNICAL SPECIFICATION 1.10 AND 3.2.8

Standard 1 -- Does the proposed amendment involve a significant increase in the probability or consequences of an accident previously evaluated?

The proposed amendment does not involve any change to the method of operation of any plant equipment or modify any plant equipment other than a change in the allowed pressurizer pressure band during MODE 1 and MODE 2 operations. Tightening the allowed pressurizer pressure band does not add any operating space not previously allowed and doesn't affect the nominal operating pressure and therefore does not present a new or more frequent initiating event for a transient. Utilizing more accurate DCFs in calculations for determining thyroid dose consequences does not involve any changes to plant operation or



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plant equipment. Thus, the proposed changes do not involve a significant increase in the probability of an accident.

Based on a review of historical plant operating data for pressurizer pressure, limiting the allowed operating band for pressure will not require additional operator action or create additional burden on the operators. This change will have no impact on operations since nominal operating pressure is approximately 2250 psia and there is only approximately 10 psi deviation from this pressure during normal operation. Additionally, the proposed changes to the allowed pressurizer pressure operating band will have no impact on the probability of a reactor trip since trip setpoints will remain unchanged.

Assuming all other inputs remain the same, transients sensitive to initiation from a minimum pressurizer pressure will have improved results if analyzed with the proposed lower limits. These improved results can be utilized to develop bounding analyses for some events which are typically evaluated on a cycle-specific basis, which will allow for more flexibility in fuel management for future cycles. The preservation of acceptable accident consequences, in accordance with the licensing basis, will be assured on a cycle-specific basis by satisfactory performance of the reload analyses. Therefore, the proposed changes do not result in a significant increase in the consequences of an accident previously evaluated.

Standard 2 -- Does the proposed amendment create the possibility of a new or different kind of accident from any accident previously evaluated?

The proposed amendment does not modify the configuration of the units, involve any change to plant equipment, or change the method of plant operation other than a decrease in the allowed pressurizer pressure band during MODE 1 and MODE 2 operations. Accordingly, no new failure modes have been defined for any plant system or component important to safety, nor has any new limiting failure been identified as a result of the proposed changes. The intent of the proposed change associated with pressurizer pressure is to limit the range of allowable operating pressure and the related initial conditions for the safety analysis. This provides margin which will be utilized to develop bounding analyses for some events which are typically evaluated on a cycle-specific basis, which will allow for more flexibility in fuel management for future cycles.

The utilization of the ICRP methodology for determining DCFs uses more recent data which only affects calculations for determining thyroid dose consequences and does not involve equipment or plant operations. Therefore, the amendment

does not create the possibility of a new or different kind of accident from any accident previously evaluated.

Standard 3 -- Does the proposed amendment involve a significant reduction in a margin of safety?

The proposed change associated with pressurizer pressure will implement a more restrictive acceptance criteria in surveillance procedures to ensure that safety analysis assumptions are maintained. The more restrictive range of operation is currently analyzed and bounded by the existing safety analyses and does not add new operating space or impact normal plant operation. The new pressurizer pressure range ensures that safety margins are maintained within the results of existing analyses. The margin of safety between the analyzed values and the points at which safety analysis results become unacceptable, improves for currently operating cycles. Future cycles of operation will be evaluated in the reload analysis process for acceptable consequences. Therefore, this change does not involve a significant reduction in a margin of safety.

The change associated with the utilization of the ICRP methodology for determining DCFs allows the use of more recent data which only affects calculations for determining thyroid dose consequences. ICRP-30 is recognized in Revision 1 of NUREG-1432, "Standard Technical Specifications, Combustion Engineering Plants," as an acceptable source document for DCFs. The new methodology will result in more accurate DCFs used in the determination of dose consequences. Therefore, this change does not involve a significant reduction in a margin of safety.

F. **ENVIRONMENTAL DETERMINATION**

TECHNICAL SPECIFICATION 1.10 AND 3.28

APS has determined that the proposed amendment involves no change in the amount or type of effluent that may be released offsite, and that there is no increase in individual or cumulative occupational radiation exposure. As such, operation of PVNGS Units 1, 2, and 3 in accordance with the proposed amendment, does not involve an unreviewed environmental safety question.

