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10 CFR 50.90

Palo Verde Nuclear
Generating Station

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102-06604-DCM/CJS
October 11, 2012

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

Dear Sirs:

Subject: **Palo Verde Nuclear Generating Station (PVNGS)
Units 1, 2, and 3
Docket Nos. STN 50-528, 50-529, and 50-530
Response to Request for Additional Information Regarding License
Amendment Request to Eliminate the Use of the Term CORE
ALTERATION in the Technical Specifications**

By letter number 102-06486, dated March 8, 2012 [Agencywide Documents Access and Management System (ADAMS) Accession No. ML12076A045], Arizona Public Service Company (APS) requested an amendment to the Technical Specifications (TS) that are incorporated as Appendix A to Renewed Facility Operating License Nos. NPF-41, NPF-51, and NPF-74, for PVNGS Units 1, 2, and 3, respectively. The proposed license amendment request (LAR) would eliminate the use of the term CORE ALTERATIONS throughout the TSs consistent with Technical Specification Task Force (TSTF) Traveler 471-A, Revision 1, "Eliminate use of term CORE ALTERATIONS in ACTIONS and Notes."

By letter dated September 11, 2012 (ADAMS Accession No. ML12250A720), the Nuclear Regulatory Commission (NRC) provided a request for additional information (RAI) to support the NRC staff review. The APS response to the RAI is provided in the Enclosure to this letter.

No commitments are being made to the NRC by this letter.

By copy of this letter, this LAR RAI response is being forwarded to the Arizona Radiation Regulatory Agency (ARRA) pursuant to 10 CFR 50.91(b)(1).

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Should you need further information regarding this LAR, please contact Robert K. Roehler, Licensing Section Leader, at (623) 393-5241.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on 10/11/12
(Date)

Sincerely,

D.C. Morris

DCM/RKR/CJS/hsc

Enclosure - Response to Request for Additional Information Regarding License
Amendment Request to Eliminate the Use of the Term CORE ALTERATION in the
Technical Specifications

cc: E. E. Collins Jr. NRC Region IV Regional Administrator
L. K. Gibson NRC NRR Project Manager for PVNGS
M. A. Brown NRC Senior Resident Inspector for PVNGS
A. V. Godwin Arizona Radiation Regulatory Agency (ARRA)
T. Morales Arizona Radiation Regulatory Agency (ARRA)

ENCLOSURE

Response to Request for Additional Information Regarding License Amendment Request to Eliminate the Use of the Term CORE ALTERATION in the Technical Specifications

NRC Request

The proposed REQUIRED ACTION A.1 of TS 3.9.2 states that with one startup range monitor (SRM) inoperable, the operator is required to suspend positive reactivity additions. This REQUIRED ACTION is inconsistent with guidance in TS 3.9.2 of NUREG-1432, Revision 4, "Standard Technical Specifications, Combustion Engineering," April 2012 (STS) (ADAMS Accession No. ML12102A165). For Condition A of TS 3.9.2 of the STS, the REQUIRED ACTION states that if one required SRM is inoperable, the operators are required to suspend immediately: (A. 1) positive reactivity additions, and (A.2) introduction of coolant into the reactor coolant system (RCS) with boron concentration less than required to meet the minimum boron concentration of limiting condition for operation (LCO) 3.9.1.

The proposed TS 3.9.2 does not adopt REQUIRED ACTION A.2 as stated above. Suspending introduction of coolant inventory from sources that have a boron concentration less than that what would be required in the RCS for minimum refueling boron concentration could prevent the boron dilution event from occurring.

Please address the acceptability of the proposed TS 3.9.2 without inclusion of the REQUIRED ACTION A.2 specified in STS 3.9.2. In particular, please explain what is captured by "suspend positive reactivity additions" for Palo Verde.

APS Response

The proposed TS 3.9.2 does not adopt REQUIRED ACTION A.2, as this ACTION in the STS is the result of TSTF-286, entitled *Define "operations Involving Positive Reactivity Additions,"* which has not been implemented at PVNGS. TSTF-286 was developed to provide operational flexibility, while also limiting any potential for excess positive reactivity additions.

Specifically, most TS Actions that required suspension of operations involving positive reactivity additions were revised in the TSTF-286 to only limit the introduction into the RCS of reactivity more positive than that required to meet the required shutdown margin (SDM) or refueling boron concentration.

The TS Actions that preclude positive reactivity changes and/or reduction in boron concentration are ensuring either no power increases, or continued margin to core criticality operations. During conditions in which these TS Actions may be required, various unit operations must continue. RCS inventory must be maintained, and RCS temperature must be controlled.

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These operational activities may involve additions to the RCS of cooler water (a positive reactivity effect in most cases) and may involve inventory makeup from sources that are at boron concentrations less than RCS concentration. As stated in TSTF-286 these operational activities should not be precluded if the worst-case overall effect on the core would still assure adequate SDM or the required refueling boron concentration is maintained. Thus, TSTF-286, REQUIRED ACTION A.2 of TS 3.9.2, reflected in the STS, is an Action that provides greater operational flexibility, while controlling minimum boron concentration.

The APS proposed REQUIRED ACTION, A.1, *Suspend positive reactivity additions*, and its COMPLETION TIME of *immediately* ensures that the sources of positive reactivity additions are suspended. The PVNGS LAR does not include the latitude provided by TSTF-286 to introduce coolant into the RCS with boron concentrations below the existing RCS boron concentration, but above the minimum boron concentration of LCO 3.9.1, which is specified in the Core Operating Limits Report (COLR).

TS 3.9.2 applies in MODE 6 only (i.e., at least one reactor vessel head closure bolt less than fully tensioned). In this mode of operation, what is captured by "suspend positive reactivity additions" includes evolutions that may noticeably degrade the existing SDM, even if there is margin between the existing SDM and the minimum SDM requirements. The following types of evolutions would be suspended, if in progress at the time of LCO 3.9.2, Condition A, entry:

- Withdrawal of control element assemblies (CEAs) from the reactor core
- Movement of fuel assemblies (either irradiated or non-irradiated) either over or into the reactor vessel
- Movement of neutron sources (PVNGS does not currently have neutron sources installed in the reactor vessel)
- Changes in shutdown cooling system alignments, such as heat exchanger bypass valve position, which would create a cooldown of the RCS water temperature, as defined in operating procedures
- Changes in the plant that would decrease RCS boron concentration by more than the inherent uncertainty in boron measurements

This would not preclude makeup from a borated water source (RWT, SFP) that has at least the same boron concentration as the RCS, nor would it exclude minor plant evolutions, under administrative controls, for removal of an item from the refueling pool and cleaning or decontamination of that item with small quantities of demineralized water. In addition, it would not preclude the completion of the movement of a component or assembly to a safe position, as described in the TS 3.9.2 Bases.

In conclusion, the APS proposed LCO 3.9.2, Action A.1, which requires suspension of positive reactivity additions, includes suspension of the introduction of coolant into the RCS with boron concentration less than the existing RCS boron concentration. The LAR provides confidence that boron concentrations will be controlled, and is more restrictive than TSTF-286.