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December 15, 2017

U.S. Nuclear Regulatory Commission
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10 CFR 50.90
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- References:
1. Arizona Public Service Company (APS) letter number 102-07277, *License Amendment Request and Exemption Request to Support the Implementation of Next Generation Fuel (NGF)*, dated July 1, 2016, [Agencywide Documents Access and Management System (ADAMS) Accession Number ML16188A332]
 2. APS letter number 102-07509, *Response to NRC Staff Request for Additional Information Regarding License Amendment and Exemption Requests Related to the Implementation of NGF*, dated June 2, 2017

Dear Sirs:

Subject: **Palo Verde Nuclear Generating Station Units 1, 2, and 3**
Docket Nos. STN 50-528, 50-529, and 50-530
Modification of Proposed License Condition for License Amendment
Request and Exemption Request to Support the Implementation of Next
Generation Fuel

In Reference 1, APS submitted a license amendment request (LAR) and exemption request to support the implementation of Next Generation Fuel (NGF) at the Palo Verde Nuclear Generating Station (PVNGS) Units 1, 2, and 3. In Reference 2, APS submitted a response to an NRC staff request for additional information (RAI), which included the following proposed license condition that was based upon interactions with the NRC staff during the audit held on March 8, 2017 (ADAMS Accession Number ML17103A400) to address the effects of thermal conductivity degradation:

“A fuel centerline temperature allowance at high burnup, as specified in Attachment 8 of the enclosure to APS letter 102-07277, dated July 1, 2016, will be set aside to account for the burnup dependent effects of Thermal Conductivity Degradation (TCD) when using the FATES3B code to determine input for NGF non-LOCA and LOCA safety analyses.”

On November 22, 2017, the NRC staff proposed a revision to the license condition wording to more clearly describe how the TCD temperature allowance will be applied as part of the PVNGS reload process. A clarification call was held on November 30, 2017, which resulted in the following modified license condition:

“APS shall apply a radial power fall off (RFO) curve penalty, equivalent to the fuel centerline temperature reduction in Section 4 of Attachment 8 to the Palo Verde license amendment request dated July 1, 2016, to accommodate the anticipated impacts of

thermal conductivity degradation (TCD) on the predictions of FATES3B at high burnup for Westinghouse Next Generation Fuel.

To ensure the adequacy of this RFO curve penalty, as part of its normal reload process for each cycle that analysis using FATES3B is credited, APS shall verify that the FATES3B analysis is conservative with respect to an applicable confirmatory analysis using an acceptable fuel performance methodology that explicitly accounts for the effects of TCD. The verification shall confirm satisfaction of the following conditions:

- i. The maximum fuel rod stored energy in the confirmatory analysis is bounded by the maximum fuel rod stored energy calculated in the FATES3B and STRIKIN-II analyses with the RFO curve penalty applied.*
- ii. All fuel performance design criteria are met under the confirmatory analysis.*

If either of the above conditions cannot be satisfied initially, APS shall adjust the RFO curve penalty or other core design parameters such that both conditions are met.”

APS concurs with the modified license condition stated above. The modified license condition ensures APS is appropriately applying the TCD temperature allowance to FATES3B and develops the appropriate RFO curves specific to the use of Westinghouse NGF. Confirmation of the applicability of the temperature allowance will be performed each reload cycle through the use of an extended fuel performance process in addition to the current reload methodology at PVNGS. Further discussion on the confirmation of the TCD temperature allowance is provided in Reference 2.

Should you have any questions concerning the content of this letter, please contact Michael DiLorenzo, Department Leader, Nuclear Regulatory Affairs, at (623) 393-3495.

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

Executed on December 15, 2017
(Date)

Sincerely,

MLL/TNW

cc:	K. M. Kennedy	NRC Region IV Regional Administrator
	S. P. Lingam	NRC NRR Project Manager for PVNGS
	C. A. Peabody	NRC Senior Resident Inspector for PVNGS
	A. V. Godwin	Arizona Radiation Regulatory Agency (ARRA)
	T. Morales	Arizona Radiation Regulatory Agency (ARRA)