



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

February 12, 2016

LICENSEE: Arizona Public Service Company

FACILITY: Palo Verde Nuclear Generating Station, Units 1, 2, and 3

SUBJECT: SUMMARY OF JANUARY 20, 2016, PUBLIC MEETING WITH ARIZONA PUBLIC SERVICE COMPANY TO DISCUSS UPCOMING LICENSE AMENDMENT REQUEST REGARDING NEXT GENERATION FUEL FOR PALO VERDE NUCLEAR GENERATING STATION, UNITS 1, 2, AND 3 (CAC NOS. MF7214, MF7215, AND MF7216)

On January 20, 2016, the U.S. Nuclear Regulatory Commission (NRC) staff held a Category 1 public meeting with staff from Arizona Public Service Company (APS, the licensee) at NRC Headquarters, One White Flint North, 11555 Rockville Pike, Rockville, Maryland. The purpose of the meeting was to discuss the licensee's upcoming license amendment request (LAR) regarding the use of Next Generation Fuel (NGF) for the Palo Verde Nuclear Generating Station, Units 1, 2, and 3 (Palo Verde). The meeting notice and agenda, dated January 7, 2016, are available in Agencywide Documents Access and Management System (ADAMS) at Accession No. ML16007A748. The enclosure to this document contains the meeting attendance list. The licensee provided slides for this public meeting, which are available in ADAMS at Accession No. ML16014A110.

The licensee presented its plans for licensing changes associated with the change from Combustion Engineering (CE) 16x16 Standard fuel to CE 16x16 NGF fuel. APS stated that the upcoming LAR is consistent with precedents for other CE digital protection plants, including Waterford Steam Electric Station, Unit 3 and Arkansas Nuclear One, Unit 2. Palo Verde is the last domestic station using CE Standard fuel. The licensee stated it is interested in using the new and improved NGF fuel to secure its fuel supply. APS included a simplified drawing of a typical CE 16x16 NGF fuel assembly and identified the unique features of the new fuel on slide 6 of the presentation. NGF design changes include different burnable absorber material, cladding material, fuel rod dimensions, and spacer grid design (see slide 7).

By letter dated August 17, 2010, the NRC approved a temporary exemption to allow APS to use eight lead fuel assemblies manufactured by Westinghouse with fuel rods clad with Optimized ZIRLO in Unit 3 for three cycles (ADAMS Accession No. ML101900280). After the three cycles, the licensee stated the inspection results were normal except for an increase in crud found near fuel pins 8 and 9. The licensee added a tab to the NGF fuel design to address the crudding issue and APS determined the NGF fuel is acceptable to put in each of the Palo Verde units.

The NGF fuel design is approved in Westinghouse topical report WCAP-16500-P-A, Revision 0, "CE 16 x 16 Next Generation Fuel Core Reference Report," and Supplement 1, "Application of CE Setpoint Methodology for CE 16x16 Next Generation Fuel (NGF)." Supplement 2, "Evolutionary Design Changes to CE 16x16 Next Generation Fuel and Method for Addressing the Effects of End-of-Life Properties on Seismic and Loss of Coolant Accident Analyses," of

WCAP-16500-P addresses three design changes to spacer grids and addresses Information Notice (IN) 2012-09, "Irradiation Effects on Fuel Assembly Spacer Grid Crush Strength," dated June 28, 2012 (ADAMS Accession No. ML113470490). Supplement 2 is currently with NRC for review and approval. APS stated its need for WCAP-16500-P, Supplement 2 to be approved prior to NGF LAR submittal. The licensee asked when Supplement 2 will be approved and how a delay in the approval will impact the NGF LAR. NRC commented on the fact that there are two topical reports under NRC review that address IN 2012-09, including WCAP-16500-P, Supplement 2. At this time, NRC is not prepared to issue an approved topical report addressing IN 2012-09 for APS to use in its NGF submittal. However, NRC staff proposed a potential path forward to prevent a large delay in APS's NGF submittal schedule. NRC staff discussed the possibility of Westinghouse removing the IN 2012-09 piece of WCAP-16500-P, Supplement 2, to allow NRC to complete its review of Supplement 2. In order to ensure APS addresses the concerns in IN 2012-09, NRC staff suggested a license condition as part of the NGF LAR. APS stated its concern with the path forward because the analysis supporting the NGF LAR uses flow water dampening value, which is a part of WCAP-16500-P, Supplement 2. The licensee stated that it will discuss options with its management and determine a path forward.

By letter dated November 25, 2015 (ADAMS Accession No. ML15336A251), APS submitted an LAR to the NRC, which updates the criticality analysis in the spent fuel pool (SFP). During the public meeting, the licensee asked if the NRC considers the NGF LAR is linked to the SFP criticality LAR, which is currently under NRC review. According to NRC guidance LIC-109, "Acceptance Review Procedures," a licensing action is considered linked when approval of the LAR is contingent upon the approval of another LAR currently under review. The guidance states that linked LARs should not be accepted for NRC review and approval until all prerequisite RLAs have been reviewed and approved by the NRC. At this time, NRC staff does not consider the NGF LAR to be linked to the SFP criticality LAR.

The licensee discussed the reload method changes associated with the NGF LAR, including the addition of VIPRE thermal-hydraulic code. APS also touched upon the departure from nucleate boiling ratio (DNBR) limit implementation plan. The licensee stated the NGF LAR will not change the Technical Specification (TS) 2.1.1.1 DNBR safety limit; however, the analytical limit decreases as a result of the switch to NGF fuel. As part of the NGF submittal, the licensee plans to revise TS 4.2.1, "Fuel Assemblies," to add the new cladding material and TS 5.6.5b, "Core Operating Limits Report (COLR)," to update the COLR methodologies. The licensee updated its loss-of-coolant accident (LOCA) analysis to address the change in burnable absorber and cladding material. NRC staff cautioned the use of FATES3B fuel performance code because it is not conservative.

The licensee provided a list of the technical areas reviewed as part of the NGF LAR: mechanical design, core design, fuel performance, core thermal hydraulic design, fuel rod corrosion, non-LOCA transient analysis, emergency core cooling system performance analyses, containment response, radiological source term, radiological accident, core reload setpoints, reactor coolant system (RCS) structural, RCS design/systems/components, and reactor vessel fluence and brittle fracture pressure temperature limits. NRC staff asked APS to explicitly state which technical areas are not changing in the NGF LAR.

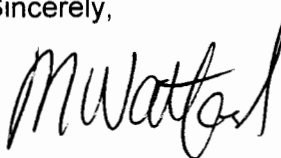
APS concluded the presentation with information on the implementation schedule and a summary of the topics discussed. The licensee stated its plans to submit the NGF LAR in

April 2016 and to order the NGF fuel in June 2016. NRC proceeded to ask several questions about the design changes associated with the NGF LAR. NRC staff advised APS to address training of the operators in the LAR and to thoroughly explain the change from TORC to VIPRE thermal-hydraulic code.

There were no public comments made at the public meeting. The NRC did not receive public meeting feedback forms.

If you have any questions, please contact me at (301) 415-1233 or via e-mail at Margaret.Watford@nrc.gov.

Sincerely,

A handwritten signature in black ink, appearing to read 'M Watford', written in a cursive style.

Margaret M. Watford, Project Manager
Plant Licensing Branch IV-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos. STN 50-528, STN 50-529,
and STN 50-530

Enclosure:
List of Attendees

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LIST OF ATTENDEES

JANUARY 20, 2016, PUBLIC MEETING WITH ARIZONA PUBLIC SERVICE COMPANY

REGARDING NEXT GENERATION FUEL LICENSE AMENDMENT REQUEST

PALO VERDE NUCLEAR GENERATING STATION, UNITS 1, 2, AND 3

Maggie Watford	U.S. Nuclear Regulatory Commission (NRC)
Robert Pascarelli	NRC
Robert Taylor	NRC
Paul Clifford	NRC
Eric Oesterle	NRC
Jeremy Dean	NRC
Kevin Hsueh	NRC
Josh Borromeo	NRC
Mathew Panicker	NRC
Daniel Beacon	NRC
Will MacFee	NRC
Khadijah West	NRC
Ekaterina Lenning*	NRC
Nick Domenico*	NRC
Thomas Weber	Arizona Public Service Company (APS)
Michael DiLorenzo	APS
Brian Blackmore	APS
Matthew Cox	APS
Robert Hicks	APS
Cory Schingeck	APS
Richard Wenzel*	APS
Thomas Remick*	APS
Phillip Hoffspiegel*	APS
Lun-Chih Hwang*	APS
Tai Shin*	APS
Carl Stephensen*	APS
Delbert Elkinton*	APS
David Medek*	APS
Vick Nazareth	Anatech Corporation (Anatech)
Mark Drucker*	Anatech
Thomas Zalewski	Westinghouse Electric Company (WEC)
Jeff Brown	WEC
Doug Weaver	WEC
Max O'Cain	WEC
Hans Van De Berg*	WEC

*participated via phone

Enclosure

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/RA/

Margaret M. Watford, Project Manager
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Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

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**ADAMS Accession Nos.: Meeting Notice ML16007A748; Meeting Slides ML16014A110;
Meeting Summary ML16028A394 *concurrence by email**

OFFICE	NRR/DORL/LPL4-1/PM	NRR/DORL/LPL4-1/LA	NRR/DSS/STSB/BC	NRR/DSS/SRXB/BC(A)
NAME	MWatford	JBurkhardt	RElliott*	EOesterle*
DATE	1/29/16	1/29/16	1/28/16	1/28/16
OFFICE	NRR/DPR/PLPB/BC	NRR/DSS/SNPB/BC	NRR/DORL/LPL4-1/BC	NRR/DORL/LPL4-1/PM
NAME	KHsueh*	JDean*	RPascarelli	MWatford
DATE	2/8/16	2/11/16	2/12/16	2/12/16

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