



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

October 19, 2016

Mr. Randall K. Edington  
Executive Vice President  
Chief Nuclear Officer  
Mail Station 7602  
Arizona Public Service Company  
P.O. Box 52034  
Phoenix, AZ 85072-2034

SUBJECT: PALO VERDE NUCLEAR GENERATING STATION, UNITS 1, 2,  
AND 3 - REGULATORY AUDIT PLAN FOR NOVEMBER 2-3, 2016, AUDIT  
AT WESTINGHOUSE FACILITY IN ROCKVILLE, MARYLAND, IN SUPPORT  
OF NEXT GENERATION FUEL LICENSE AMENDMENT REQUEST AND  
EXEMPTION (CAC NOS. MF8076, MF8077, MF8078, MF8079, MF8080,  
AND MF8081)

Dear Mr. Edington:

By letter dated July 1, 2016 (Agencywide Documents Access and Management System Accession No. ML16188A336), Arizona Public Service Company (APS) requested changes to the Technical Specifications (TSs) to support the implementation of next generation fuel (NGF) for Palo Verde Nuclear Generating Station (PVNGS), Units 1, 2, and 3. The proposed changes would revise TS 4.2.1, "Reactor Core, Fuel Assemblies," and 5.6.5.b, "Core Operating Limits Report (COLR)," and allow the use of Combustion Engineering 16x16 NGF clad with the Optimized ZIRLO™ material in PVNGS, Units 1, 2, and 3. To support the fuel transition, APS also requested an exemption from certain requirements of Title 10 of the *Code of Federal Regulations* (10 CFR), Part 50, Section 10 CFR 50.46 and 10 CFR 50 Appendix K to allow the use of Optimized ZIRLO™ as a cladding material in PVNGS, Units 1, 2, and 3.

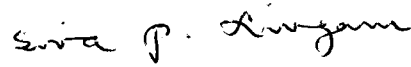
To support its safety evaluation, the U.S. Nuclear Regulatory Commission (NRC) staff will conduct an audit at the Westinghouse facility in Rockville, Maryland, on November 2-3, 2016. The Enclosure to this letter provides an audit plan in support of this audit.

R. Edington

- 2 -

If you have any questions, please contact me at 301-415-1564 or via e-mail at [Siva.Lingam@nrc.gov](mailto:Siva.Lingam@nrc.gov).

Sincerely,

A handwritten signature in black ink that reads "Siva P. Lingam". The signature is written in a cursive, flowing style.

Siva P. Lingam, 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:  
Regulatory Audit Plan

cc w/encl: Distribution via Listserv

REGULATORY AUDIT PLAN FOR NOVEMBER 2-3, 2016, AUDIT AT WESTINGHOUSE  
FACILITY IN ROCKVILLE, MARYLAND, TO SUPPORT REVIEW OF  
NEXT GENERATION FUEL LICENSE AMENDMENT REQUEST AND EXEMPTION  
ARIZONA PUBLIC SERVICE COMPANY  
PALO VERDE NUCLEAR GENERATING STATION, UNITS 1, 2, AND 3  
DOCKET NOS. 50-528, 50-529, AND 50-530

1.0 BACKGROUND

The U.S. Nuclear Regulatory Commission (NRC) staff is currently engaged in a review of a license amendment request for the Palo Verde Nuclear Generating Station (PVNGS), Units 1, 2, and 3. By letter dated July 1, 2016 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML16188A336), Arizona Public Service Company (APS, the licensee) requested changes to the Technical Specifications (TSs) to support the implementation of next generation fuel (NGF) for PVNGS, Units 1, 2, and 3. The proposed changes would revise TS 4.2.1, "Reactor Core, Fuel Assemblies," and 5.6.5.b, "Core Operating Limits Report (COLR)," and will allow the use of Combustion Engineering (CE) 16x16 NGF clad with the Optimized ZIRLO™ material in PVNGS, Units 1, 2, and 3. To support the fuel transition, APS also requested an exemption from certain requirements of Title 10 of the *Code of Federal Regulations* (10 CFR), Part 50, Section 10 CFR 50.46, "Acceptance criteria for emergency core cooling systems [ECCS] for light-water nuclear power reactors," and 10 CFR Part 50, Appendix K, "ECCS Evaluation Models," to allow the use of Optimized ZIRLO™ as a cladding material in PVNGS, Units 1, 2, and 3.

The NRC staff has proposed to conduct a regulatory audit at this point in the review process in an effort to increase review efficiency. The proposed audit will help the NRC staff better understand the supporting documentation and analysis results through interaction with APS's technical experts and will help to focus the staff's requests for additional information on those questions where docketed information is needed to complete the review.

The proposed audit will be held in accordance with the Office of Nuclear Reactor Regulation (NRR) Office Instruction LIC-111, "Regulatory Audits," dated December 16, 2008 (ADAMS Accession No. ML082900195).

2.0 REGULATORY AUDIT SCOPE

The NRC staff would like APS to make available appropriate staff with detailed knowledge of the PVNGS licensing basis and the related topical reports, the NGF design, and the analyses updated in support of the transition.

Enclosure

Discussion at the audit is expected to touch on the entire scope of the submittal, at least briefly, but will focus less on the exemption request and most closely on the fuel transition license amendment request, including the following subjects:

- Application of Analysis Methodologies:
  - Adherence to limitations and conditions (Submittal Attachment 5)
  - Selection of critical heat flux
  - Correlations for specific applications
- Fuel Assembly Structural
  - Seismic/loss-of-coolant accident (LOCA) testing and analyses.
- PVNGS Updated Final safety Analysis Report (UFSAR) Chapter 15 Analysis:
  - Analysis inputs, methods, and results
  - Bounded/unaffected determinations for events
  - Transition core effects
  - Fuel failure analyses and Departure from nuclear boiling propagation
- LOCA and Long-Term Cooling Analyses.

The NRC staff does not expect APS to prepare presentations on these subjects; rather, APS should be prepared with the appropriate subject matter experts and any materials that would be useful for discussion.

### 3.0 TEAM AND REVIEW ASSIGNMENTS

<b>Area of Review</b>	<b>Assigned Auditor</b>
Technical Reviewer	Daniel Beacon (NRC)
Technical Reviewer	Diana Woodyatt (NRC)
Technical Reviewer	Joshua Kaizer (NRC)
Technical Reviewer	John Lehning (NRC)
Project Manager	Siva P. Lingam (NRC)

### 4.0 LOGISTICS

The audit will be conducted at the Westinghouse facility in Rockville, Maryland, on November 2-3, 2016. Entrance and exit briefings will be held at the beginning and end of this audit, respectively.

The licensee is requested to provide a conference room with a white board for discussions, as well as printed copies of the following reports:

- All enclosures to the licensee's original submittal dated July 1, 2016.

- Each of the five approved methodologies to be added to TS 5.6.5.b with related supplements and addenda to be added to the COLR list.

APS should also provide any other documentation that may aid discussion such as analysis reports (PVNGS UFSAR Chapter 15, LOCA).

It would also be beneficial to have APS bring engineers who are familiar with the setpoints and Modified Statistical Combination of Uncertainties related methods (the whole conversion process from VIPRE [Versatile Internals and Component Program for Reactors]-W WSSV [Westinghouse Side Supported Vane Correlation] to CETOP CE-1). The NRC staff does not think there is an issue, necessarily, but it is a rather convoluted process that the staff would like to more clearly understand. Since it is complicated and may be a lengthy discussion, it would be best if APS could provide an additional small conference room with a whiteboard to have this discussion concurrent with the main discussion of the other topics listed above.

The audit will start at 8:30 a.m. on Wednesday, November 2, and conclude on Thursday, November 3, at approximately at 3:00 p.m.

## 5.0 DELIVERABLES

At the conclusion of the audit, the NRC staff will provide a summary of audit results for each of the topics defined in the audit scope. The NRC Regulatory Audit Report will be issued within 90 days of the completion of the audit.

R. Edington

- 2 -

If you have any questions, please contact me at 301-415-1564 or via e-mail at [Siva.Lingam@nrc.gov](mailto:Siva.Lingam@nrc.gov).

Sincerely,

/RA/

Siva P. Lingam, 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:  
Regulatory Audit Plan

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JLehning, NRR/DSS/SNPB

JKaizer, NRR/DSS/SNPB

**ADAMS Accession No.: ML16291A448**

\*by memorandum

OFFICE	NRR/DORL/LPL4-1/PM	NRR/DORL/LPL4-1/LA*	NRR/DSS/SNPB/BC*
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DATE	10/18/16	10/18/16	10/14/16
OFFICE	NRR/DORL/LPL4-1/BC	NRR/DORL/LPL4-1/PM	
NAME	RPascarelli	SLingam	
DATE	10/19/16	10/19/16	

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