



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

May 1, 2018

Mr. Robert S. Bement
Executive Vice President Nuclear/
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 SUMMARY RE: LICENSE AMENDMENT REQUESTS TO
ADOPT TECHNICAL SPECIFICATIONS TASK FORCE TRAVELER TSTF-505-A,
RISK-INFORMED EXTENDED COMPLETION TIMES INITIATIVE 4b, AND
10 CFR 50.69, "RISK-INFORMED CATEGORIZATION AND TREATMENT OF
STRUCTURES, SYSTEMS, AND COMPONENTS FOR NUCLEAR POWER
REACTORS" (CAC NOS. MF6576, MF6577, AND MF6578, MF9971, MF9972,
AND MF9973; EPID L-2015-LLA-0001, AND L-2017-LLA-0276)**

Dear Mr. Bement:

By letter dated July 31, 2015 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML15218A300), as supplemented by letters dated April 11, 2016, and November 3, 2017 (ADAMS Accession Nos. ML16102A463 and ML17307A188, respectively), Arizona Public Service Company (the licensee) submitted a license amendment request (LAR) to modify Technical Specification (TS) requirements to permit the use of risk-informed completion times in accordance with Technical Specifications Task Force (TSTF) Traveler TSTF-505-A, Revision 1, "Provide Risk-Informed Extended Completion Times – RITSTF [Risk-Informed TSTF] Initiative 4b," for Palo Verde Nuclear Generating Station (PVNGS), Units 1, 2, and 3.

In addition, by letter dated July 19, 2017 (ADAMS Accession No. ML17200D162), the licensee submitted another LAR to adopt Title 10 of the *Code of Federal Regulations* (10 CFR) Section 50.69, "Risk-informed categorization and treatment of structures, systems and components for nuclear power reactors."

The U.S. Nuclear Regulatory Commission (NRC) staff and contractors from the Pacific Northwest National Laboratories (PNNL) conducted a risk-informed regulatory audit at the licensee's site facility in Tonopah, Arizona, from February 20-23, 2018, to review technical information needed to support the staff's licensing decision, and to develop requests for additional information (RAIs) related to these LARs for PVNGS, Units 1, 2, and 3.

The information submitted in support of the PVNGS LARs are under final review, and additional information needed to document the results of the audit has been formally requested by the NRC staff using the RAI process in accordance with the Office of Nuclear Reactor Regulation (NRR)

Office Instruction LIC-101, "License Amendment Review Procedures." Technical discussions at the audit focused on the following review areas: (1) the Facts and Observation closure process performed by the licensee, (2) Probabilistic Risk Assessment (PRA) model and peer review history, (3) 10 CFR 50.69 pilot process and draft procedures, (4) Site PRA configuration and control process, (5) Risk-Managed TSs, and (6) TS Requirements for risk-informed completion times.


The NRC audit team consisted of NRC staff from NRR, Division of Risk Assessment, Division of Safety Systems, and Division of Engineering; NRC staff from the Office of New Reactors, Division of Safety Systems, Risk Assessment, and Advanced Reactors; and staff from PNNL. Due to two review areas, a staggered approach was used to conduct the audit, which resulted in focusing on 10 CFR 50.69 on February 20-21, 2018; TSTF-505 on February 21-22, 2018; and then seismic PRA on February 22-23, 2018. Enclosure 1 provides the list of audit attendees from NRC, PNNL, the licensee, and observers.

The regulatory audit began on February 20, 2018, with an entrance meeting between the NRC audit team and the licensee's staff and contractors. During the audit, NRC audit team members participated in technical discussions according to the audit plan (ADAMS Accession No. ML18037A953). Technical discussions focused on technical adequacy of the internal events PRA and fire PRA, the 50.69 categorization process, and a review of the audit questions. The NRC audit team also discussed lessons learned from previous 10 CFR 50.69 audits.

On February 23, 2018, at the conclusion of the audit, the NRC audit team participated in an exit meeting with the licensee's staff. The NRC audit team provided a brief conclusion of the audit objectives and presented details on the path forward. There were no open items in the discussion and no deviation from the audit plan. Enclosure 2 contains a list of documents reviewed by the team during the audit.

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

Sincerely,



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

Enclosures:

1. List of Participants
2. List of Documents Reviewed

cc: Listserv

List of Participants

U.S. Nuclear Regulatory Commission (NRC) Audit Team

| | |
|-----------------------|--|
| Jay Robinson | NRC/Acting Branch Chief/ Probabilistic Risk Assessment (PRA) |
| Victor Cusumano | NRC/Branch Chief/ Technical Specifications Task Force |
| Tania Martinez-Navedo | NRC/Branch Chief/Electrical Engineering (EE) |
| Leslie Fields | NRC/Audit Lead |
| Adrienne Driver | NRC/PRA 50.69 |
| Todd Hilsmeier | NRC/PRA 50.69 |
| Brandon Hartle | NRC/PRA 4b |
| Jonathan Evans | NRC/PRA 4b |
| Sara Lyons | NRC/Seismic PRA |
| Malcolm Patterson | NRC/Seismic PRA |
| George Thomas | NRC/Structural Engineering |
| Kaihwa (Robert) Hsu | NRC/Mechanical Engineering |
| Khoi Nguyen | NRC/Electrical Engineering |
| Margaret Chernoff | NRC/Technical Specification |
| Khadijah West | NRC/Instrumentation & Control |
| Ming Li | NRC/Instrumentation & Control |
| Steve Short | PNNL/Seismic PRA/4b |
| Garill Coles | PNNL/Seismic PRA/50.69 |
| Nathan Barrett | PNNL/Seismic PRA/Fragilities |

Palo Verde Nuclear Generating Station (PVNGS) Audit Team

| | |
|-----------------|------------------------------|
| Frank Kusluch | PVNGS/Risk Informed |
| Bryan Thiele | PVNGS/Risk Informed |
| Chris Schrecker | PVNGS/System Engineering |
| Katie Clifton | PVNGS/System Engineering |
| William Palo | Design Engineering |
| Maria Ledsma | Ops Computer Systems |
| Sean McCormack | NRA |
| James Decker | OPS |
| Sam Gill | OPS |
| Kevin Foster | Fire |
| Heather Szews | Duke Energy Engineer |
| Carl Stephenson | NRA-Licensing |
| Chris Wandell | Civil Design |
| Adriana Harris | Civil Design |
| Paul Hopkins | Operations |
| Tom Weber | NRA |
| Mike Dilorenzo | NRA |
| Maria Lacal | SVP Regulatory & Oversight |
| Brad Berles | Nuclear Fuels Management |
| Chuck Kharri | VP Site Operations/Plant Mgr |
| Matt Kura | NRA |
| Joe Harnden | PRA |
| Jonathan Lucero | PRA |
| Mark Hulet | PRA |
| Andrea Maioli | Westinghouse |
| Hunter Young | Jensen Hughes |
| Thomas Hook | PRA |
| Sarah Kane | PRA |
| Michael Wittas | PRA |
| Michael Cynber | Enercom |
| Everett Depue | PRA |
| Patrick Bozym | PRA |
| Matthew Cox | NRA |

List of Documents Reviewed During the Audit

The following documents were reviewed by the NRC audit team during the audit. The documents generally included procedures that implement the licensee's 10 CFR 50.69 program; draft categorization reports for radiation monitoring, chemical and volume control, and main steam systems; supporting probabilistic risk assessment (PRA) documents; draft procedures for determining PRA functionality, calculating risk-informed completion times and risk management action times, and establishing risk management actions; Nuclear Energy Institute (NEI) Appendix X Facts and Observations (F&O) closure report; and, seismic fragility analysis reports.

- 01DP-ORS07, 10 CFR 50.69 Program Description;
- 01DP-ORS08, 10 CFR 50.69 Risk Informed Categorization for Structures Systems and Components;
- 01DP-ORS09, 10 CFR 50.69 Active Component Risk Hazards Assessment ;
- 01DP-ORS10, 10 CFR 50.69 Passive Component Categorization;
- 01DP-ORS11, 10 CFR 50.69 Alternative Treatment Requirements;
- 01DP-ORS12, 10 CFR 50.69 Requirements for Immediate Reviews, Periodic Reviews, and Performance Monitoring;
- 01DP-ORS013, 10 CFR 50.69 Integrated Decision Panel Training and Qualification Requirements;
- Draft Risk Informed Categorization Results for Radiation Monitoring;
- Draft Risk Informed Categorization Results for Chemical and Volume Control;
- Draft Risk Informed Categorization Results for Main Steam;
- 70DP-0RA03, Probabilistic Risk Assessment Model Control;
- ENG WO, Document the resolution of findings and observations from the Fire PRA reviews conducted in October 2012 and December 2014;
- 13-NS-F012, Fire PRA – Units 1, 2, and 3 Delta Assessment;
- NN345-A00106, PVNGS Unit 1 S-PRA Results Applicability Verification for Unit 2 and 3;
- Draft Procedure 40DP-9RS03, Risk Management Actions (RMAs);
- Draft Procedure 40DP-9RS04, PRA Functionality Determination;
- Draft Procedure 40DP-9RS05, Risk Management Action Times (RMATs) and Risk-informed Completion Times (RICTs);
- NEI Appendix X F&O closure report;
- 11c4043-CAL-028, Revision 1, Seismic Fragility Parameters for Selected Relays;
- 11c4043-CAL-030, Revision 0, Seismic Fragility Analysis of Turbine Building;
- 11c4043-LSC-029, PVNGS S-PRA – Peer Review Resolution Information;
- 11c4043-RPT-002, Fragility Analysis Plan;
- 11c4043-RPT-003, Seismic Fragility Analysis Report; and
- 11c4043-RPT-004, regarding how the fragility analysis for Unit 1 was applied to Units 2 and 3;

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 AND MF9973; EPID L-2015-LLA-0001, AND L-2017-LLA-0276)
 DATED MAY 1, 2018

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| RidsNrrDssStsb Resource | THilsmeier, NRR/DRA/APLA |
| RidsNrrLAPBlechman Resource | SLyons, NRR/DRA/APLB |
| RidsNrrPMPaloVerde Resource | MChernoff, NRR/DSS/STSB |
| RidsRgn4MailCenter Resource | JRobinson, NRR/DRA/APLB |

ADAMS Accession No. ML18116A098

*by memorandum

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|--------|------------------|------------------|-----------------|
| OFFICE | NRR/DORL/LPL4/PM | NRR/DORL/LPL4/LA | NRR/DE/APLA/BC* |
| NAME | SLingam | PBlechman | SRosenberg |
| DATE | 4/26/18 | 4/26/18 | 4/24/18 |
| OFFICE | NRR/DORL/LPL4/BC | NRR/DORL/LPL4/PM | |
| NAME | RPascarelli | SLingam | |
| DATE | 5/1/18 | 5/1/18 | |

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