



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

March 19, 2014

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

SUBJECT: PALO VERDE NUCLEAR GENERATING STATION, UNITS 1, 2 AND 3 -  
PLAN FOR THE ONSITE AUDIT REGARDING IMPLEMENTATION OF  
MITIGATING STRATEGIES RELATED TO ORDER EA-12-049 (MITIGATING  
STRATEGIES) (TAC NOS. MF0829, MF0830 and MF0831)

Dear Mr. Edington:

On March 12, 2012, the U.S. Nuclear Regulatory Commission (NRC) issued Order EA-12-049, "Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events" (Agencywide Documents Access and Management System (ADAMS) Accession No. ML12054A736), requiring holders of operating licenses and construction permits issued under Title 10 of the *Code of Federal Regulations* Part 50 to submit for review, Overall Integrated Plans (OIPs) including descriptions of how compliance with the requirements of Attachment 2 of the order will be achieved.

By letter dated February 28, 2013 (ADAMS Accession No. ML13136A022), Arizona Public Service Company (APS, the licensee) submitted its OIP for Palo Verde Nuclear Generating Station, Units 1, 2, and 3 (PVNGS) in response to Order EA-12-049. By letters dated August 28, 2013 and February 28, 2014 (ADAMS Accession Nos. ML13246A007 and ML14066A036), APS submitted its first two six-month updates to the OIP.

By letter dated August 28, 2013 (ADAMS Accession No. ML13234A503), the NRC notified all licensees and construction permit holders that the staff is conducting audits of their responses to Order EA-12-049 in accordance with NRC Office of Nuclear Reactor Regulation Instruction LIC-111, "Regulatory Audits" (ADAMS Accession No. ML082900195). The purpose of the staff's audit is to determine the extent to which the licensees are proceeding on a path towards successful implementation of the actions needed to achieve full compliance with the order. This audit process led to the issuance of the PVNGS interim staff evaluation (ISE) and audit report (ADAMS Accession No. ML13308C153) and continues with in-office and on site portions of this audit.

The ongoing audit process, to include the in-office and on site portions, allows the staff to assess whether it has enough information to make an Integrated Plan safety evaluation. The audit allows the staff to review open and confirmatory items from the ISE, the licensee's integrated plan, and other audit questions. Additionally, the staff gains a better understanding of submitted information, identifies additional information necessary for the licensee to supplement

R. Edington

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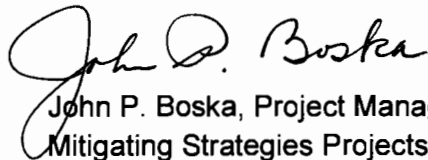
its plan, and identifies any staff potential concerns. The audit's onsite portion will occur prior to a declaration of compliance for the first unit at each site.

This document outlines the onsite audit process that continues after ISE issuance as licensees provide new or updated information via periodic updates, update audit information on e-portals, provide preliminary Overall Program Documents, and continue in-office audit communications with staff while proceeding towards compliance with the order.

The staff plans to conduct an onsite audit at the PVNGS in accordance with the enclosed audit plan from April 8-9, 2014.

If you have any questions, please contact me at 301-415-2901 or by e-mail at [John.Boska@nrc.gov](mailto:John.Boska@nrc.gov).

Sincerely,



John P. Boska, Project Manager  
Mitigating Strategies Projects Branch  
Mitigating Strategies Directorate  
Office of Nuclear Reactor Regulation

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

Enclosure:  
Audit plan

cc w/encl: Distribution via Listserv

**Audit Plan**  
**Palo Verde Nuclear Generating Station, Units 1, 2 and 3**

**BACKGROUND AND BASIS**

On March 12, 2012, the U.S. Nuclear Regulatory Commission (NRC) issued Order EA-12-049, "Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events" (Agencywide Documents Access and Management System (ADAMS) Accession No. ML12054A736), requiring power reactor licensees and construction permit holders to submit for review, Overall Integrated Plans (OIPs) including descriptions of how compliance with the requirements of Attachment 2 of the order will be achieved.

In accordance with the order, all operating power reactor licensees submitted OIPs by February 2013, and are in the process of implementing the requirements identified in the order. Licensees were required to complete full implementation no later than two refueling cycles after submittal of the OIPs or by December 31, 2016, whichever comes first.

By letter dated February 28, 2013 (ADAMS Accession No. ML13136A022), Arizona Public Service Company (APS, the licensee) submitted its OIP for Palo Verde Nuclear Generating Station (PVNGS, Palo Verde) in response to Order EA-12-049. By letters dated August 28, 2013 and February 28, 2014 (ADAMS Accession Nos. ML13246A007 and ML14066A036), APS submitted its first two six-month status reports required by the order.

By letter dated August 28, 2013 (ADAMS Accession No. ML13234A503), the NRC notified all operating power reactor licensees and construction permit holders that the staff is conducting audits of their responses to Order EA-12-049 in accordance with NRC Office of Nuclear Reactor Regulation Instruction LIC-111, "Regulatory Audits" (ADAMS Accession No. ML082900195). The purpose of the staff's audit is to determine the extent to which the licensees are proceeding on a path towards successful implementation of the actions needed to achieve full compliance with the order. This audit process led to the issuance of the PVNGS interim staff evaluation (ISE) and audit report (ADAMS Accession No. ML13308C153) and continues with in-office and on site portions of this audit.

The ongoing audit process, to include the in-office and on site portions, allows the staff to assess whether it has enough information to make an Integrated Plan safety evaluation. The audit allows the staff to review open and confirmatory items from the ISE, the licensee's integrated plan, and other audit questions. Additionally, the staff gains a better understanding of submitted information, identifies additional information necessary for the licensee to supplement its plan, and identifies any staff potential concerns. The audit's onsite portion will occur prior to the compliance date stated in the order for the first unit at each site.

This document outlines the onsite audit process that continues after ISE issuance as licensees provide new or updated information via periodic updates, update audit information on e-portals, provide preliminary Overall Program Documents (OPDs), and continue in-office audit communications with staff while proceeding towards compliance with the order.

Enclosure

Following the licensee's declaration of order compliance, the NRC staff will evaluate the OIP as supplemented, the resulting site-specific OPD, and, as appropriate, other licensee submittals based on the requirements in Order EA-12-049. The staff will make a safety determination regarding order compliance using the Nuclear Energy Institute (NEI) developed guidance document NEI 12-06, "Diverse and Flexible Coping Strategies (FLEX) Implementation Guide" issued in August, 2012 (ADAMS Accession No. ML12242A378), as endorsed by the staff via NRC staff guidance JLD-ISG-2012-01 "Compliance with Order EA-12-049, "Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events"" (ADAMS Accession No. ML12229A174). Should the licensee propose an alternative strategy to the guidance, as endorsed, for compliance, the staff will evaluate the alternative strategy in reference to the order.

#### AUDIT SCOPE

As discussed, onsite audits will be performed per Office Instruction LIC-111, "Regulatory Audits," to support the development of safety evaluations. Site-specific OIPs and OPDs rely on equipment and procedures that apply to all units at a site, therefore, audits will be planned to support the "first unit at each site." On-site audits for subsequent units at a site will be on an as needed basis.

The purpose of the audits is to obtain and review information responsive to open and/or confirmatory items from the NRC ISE of the PVNGS OIP, as supplemented, and to observe and gain a better understanding of the basis for the site's overall program to ensure the licensee is on the correct path for compliance with the Mitigating Strategies order. These may include, but are not limited to:

- Onsite review and discussion for the basis and approach for detailed analysis and Calculations
- Walk-throughs of strategies and laydown of equipment to assess feasibility, timing, and effectiveness of a given mitigating strategy or integration of several strategies
- Storage, protection, access, and deployment feasibility and practicality for onsite portable equipment
- Evaluation of staging, access, and deployment of offsite resources to include Regional Response Center (RRC) provided equipment

#### NRC AUDIT TEAM

<b>Area of Review</b>	<b>Assigned Auditor</b>
Team Lead	James A. Isom
Project Manager	John P. Boska
Technical Support	Eric E. Bowman
Technical Support	Matthew W. McConnell
Technical Support	Prem P. Sahay

NRC AUDIT TEAM – SUPPLEMENTAL MEMBERS

<b>Title</b>	<b>Team Member</b>
Director, Mitigation Strategies Directorate	Jack R. Davis
Branch Chief	Jeremy S. Bowen
Branch Chief	Stewart N. Bailey
Branch Chief	Sheena A. Whaley
Process Oversight	Victor G. Cusumano
Process Oversight	Mandy K. Halter

LOGISTICS

The audit will be conducted at Palo Verde Nuclear Generating Station from April 8<sup>th</sup> through April 9<sup>th</sup>, 2014. Entrance and exit briefings will be held with the licensee at the beginning and end of the audit, respectively, as well as daily briefings of team activities. A more detailed schedule is provided below.

A private conference room is requested for NRC audit team use with access to audit documentation upon arrival and as needed.

DELIVERABLES

An audit report/summary will be issued to the licensee within 45 days from the end of the audit.

INFORMATION NEEDS

- Materials/documentation provided in response to open or confirmatory items in the Palo Verde Nuclear Generating Station ISE
- OPD (current version), operator procedures, operator training plans, SAFER Response Plan for Palo Verde Nuclear Generating Station (playbook)
- Copies of SAFER (Areva) Technical Reports that were developed as an input to the SAFER Response Plan listed above
- Information to support the feasibility of the use of rotary-wing aircraft for delivery of equipment weighing up to 8,000 lbs from Staging Area Charlie (the Regional Response Center) to the site, i.e., either identification of a location for the staging area within 35 miles of the site or provisions for refueling of the helicopter
- Materials/documentation for staff audit questions and/or licensee OIP identified open items as listed in the Part 2 table below
- A description of the transportation equipment that will be relied upon at the site to move the generators, etc., and a description of the protection that will be afforded the transportation equipment
- Copies of FSGs and other procedures developed pursuant to EA-12-049
- Copies of maintenance and test procedures/programs developed pursuant to EA-12-049

To provide supplemental input to the ongoing audit of documents submitted to the NRC and made available via e-portal, the onsite audit will have three components: 1) a review of the overall mitigating strategies for the site, including, if needed, walk-throughs of strategies and equipment laydown of select portions; 2) a review of material relating to open or confirmatory items from the ISE, staff audit questions, and licensee open items; and 3) additional specific

issues requested by NRC technical reviewers related to preparation of a safety evaluation. Each part is described in more detail below.

Part 1 - Overall Mitigating Strategies and Program Review:

During the onsite audit, please be prepared to conduct a tabletop discussion of the site's integrated mitigating strategies compliance program. This discussion should address the individual components of the plan, as well as the integrated implementation of the strategies including a timeline. The licensee team presenting this should include necessary representatives from site management, engineering, training, and operations that were responsible for program development, and will be responsible for training and execution. Following the tabletop discussion, please be prepared to conduct walk-throughs of procedures and demonstrations of equipment as deemed necessary by NRC audit team members. Include representatives from engineering and operations that will be responsible for training and execution. At this time we expect, at a minimum, to walk-through the items below. Based on the tabletop presentations and audit activities, this list may change.

WALK-THROUGH LIST:

1. Walk-through a sample of strategies that will be delineated by specific NRC technical staff audit team members
2. Walk-through of portable (FLEX) diesel generator (DG) procedures, to include power supply pathways and areas where manual actions are required (ISE confirmatory item 3.2.4.8.A).
3. Walk-through of building access procedures, to include any unique access control devices
4. Strategy walk-through of transfer routes from staging and storage areas for both onsite and offsite equipment
5. Strategy walk-through for core cooling, to include portable pumping equipment, flow paths, and water storage locations
6. Walk-through of communications enhancements

Part 2 - ISE Open/Confirmatory Items:

During the visit, the audit team will address the following table of Open and Confirmatory Items from the ISE for your plant (ADAMS Accession No. ML13308C153). Please provide documents or demonstrations as needed to respond to each item.

Audit Item	Tech. Area	POC	Item	Review onsite
3.1.1.2.A Move Equipt.	BOP	Bowman	In its Integrated Plan, APS has identified that there is a time constraint of 34 hours to install portable 500 kW 480 V generators in order to recharge batteries. APS has not identified a means to move the generators along with the concomitant method for reasonable protection of that means from the identified hazards applicable to PVNGS as would be required to conform to the guidance of NEI 12-06, Section 5.3.2, consideration 5 and Section 9.3.2.	site
3.1.1.4.A  Offsite Resources	BOP	Bowman	APS has provided information regarding its use of the offsite resources through the industry SAFER program, and identified the local staging area, but needs to provide details on transportation to the site following a seismic event.	site
3.2.2.A	Rx Sys	Boska	Table A of Reference 18 identifies a performance criterion of 110 gpm for the identified SFP makeup pumps. This flow rate is lower than the identified minimum flow rate to compensate for boil off due to the design basis heat load and postulated losses due to leakage, which total 131 gpm. The licensee stated they would change this to provide at least 200 gpm per pump. Confirm this change.	site
3.2.4.2.A  MCR vent	BOP	Boska	In its Integrated Plan, APS has presented insufficient information for the NRC staff to conclude that the habitability limits of the control room will be maintained in all phases of an Extended Loss of Alternating Current (AC) Power (ELAP).	site
3.2.4.8.A  equipt. instrum.	Elec	Sahay	In its Integrated Plan, APS stated that instrumentation will be provided for portable equipment operation. The NRC staff requested the licensee to describe the instrumentation that will be used to monitor portable/FLEX electrical power equipment including their associated measurement tolerances/accuracy in order to support a conclusion that the equipment will be capable of being operated in a manner to protect installed equipment from adverse electrical interactions in conformance with the guidance of NEI 12-06, Section 3.2.2, guideline (13), as endorsed by JLD-ISG-2012-01. The licensee committed to provide this in a future update.	site
3.2.4.10.A  Battery Duty Cycle	Elec	McConnell	During the audit process, the licensee stated that the FLEX strategy station battery run-time was calculated in accordance with the IEEE-485 methodology using manufacturer discharge test data applicable to the licensee's FLEX strategy as outlined in the NEI position paper entitled "EA-12-049 Mitigating Strategies Resolution of Extended Battery Duty Cycles Generic Concern,"(ADAMS Accession No. ML13241A186). The NRC staff will evaluate a licensee's application of the	site

			guidance (calculations and supporting data) in its development of the final Safety Evaluation documenting compliance with NRC Order EA-12-049.	
OI-1	BOP	Bowman	A storage location for FLEX equipment needs to be selected.	site
OI-2	BOP	Boska	PVNGS Flex Support Guidelines (FSG) is currently a draft document and will need to be finalized. Existing site Emergency Operating Procedures will need to be updated to direct use of the PVNGS Extended Loss of All Site AC Guideline during an ELAP. Additionally, a program and procedural control process is under development and will be implemented to meet the requirement of NEI 12-06.	site
OI-3	BOP	Bowman	Structure, content, and details of the regional response center (RRC) playbook, and location of the offsite staging area will be determined.	site
OI-4	CV	Boska	Additional strategies to maintain containment conditions during Modes 5 and 6 ELAP will be evaluated.	site
3.1.1.2 3.1.4.1	Elec	McConnell Sahay	Review list of portable equipment and where it is stored	site
3.2.4.2	Elec	McConnell Sahay	Review assessment of room temperature and equipment ratings (including hydrogen ventilation strategy for the battery rooms)	site
3.2.4.8	Elec	McConnell Sahay	Review summary of FLEX DG sizing calculation and manufacturer data	site
3.2.4.8	Elec	McConnell Sahay	Review electrical single line diagrams for isolation/protection of equipment such as FLEX DGs and the electrical supply pathway.	site
3.2.4.9	Elec	McConnell Sahay	Review fuel management strategy for FLEX equipment and procedures.	site
3.3.2	BOP	Bowman	Maintenance and testing program review.	site



Part 3- Specific Topics for Discussion:

1. Draft of PVNGS OPD
2. Training
3. Portable (FLEX) equipment maintenance and testing
4. SAFER Response Plan (playbook)

## **Proposed Schedule**

### **Proposed Schedule**

#### **Monday, April 7, 2014**

1500 Arrive at site, get plant badges

#### **Onsite Day 1, Tuesday, April 8, 2014**

0800 Check in at site

0900 Entrance meeting

0930 PVNGS Presentation

1230 Lunch

1330 NRC Audit Team Activities commence (in parallel):

- Review documents relating to open or confirmatory items, codes, analyses, etc. {1-2-team members)
- Mitigating Strategies walk-throughs with licensee

1600 Audit Team meeting

1630 Team lead daily debrief with licensee

#### **Onsite Day 2, Wednesday, April 9, 2014**

0800 Check in at site; meet with Senior Resident/Resident

0900 NRC Audit Team Activities:

- Continue review of documents relating to open or confirmatory items, codes, analyses, etc.- if needed
- Continue Mitigating Strategy walk-throughs with licensee

1200 Lunch

1300 Continue NRC Audit Team Activities

1530 Audit Team meeting

1630 NRC/Licensee exit meeting

1700 Audit closeout/departure

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its plan, and identifies any staff potential concerns. The audit's onsite portion will occur prior to a declaration of compliance for the first unit at each site.

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If you have any questions, please contact me at 301-415-2901 or by e-mail at John.Boska@nrc.gov.

Sincerely,

*/RA/*

John P. Boska, Project Manager  
Mitigating Strategies Projects Branch  
Mitigating Strategies Directorate  
Office of Nuclear Reactor Regulation

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

Enclosure:  
Audit plan

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**ADAMS Accession No. ML14069A516**

**\*Via email**

OFFICE	NRR/DIRS/IRIB	NRR/MSD/LA	NRR/MSD/MESB/BC*
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NAME	SWhaley	JBowen	JBoska
DATE	03/12/14	03/19/14	03/19/14

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