



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION**

REGION IV  
1600 EAST LAMAR BOULEVARD  
ARLINGTON, TEXAS 76011-4511

April 28, 2021

Ms. Maria Lacal  
Executive Vice President / 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 –  
BIENNIAL PROBLEM IDENTIFICATION AND RESOLUTION INSPECTION  
REPORT 05000528/2021010 AND 05000529/2021010 AND 05000530/2021010

Dear Ms. Lacal:

On March 26, 2021, the U.S. Nuclear Regulatory Commission (NRC) completed a problem identification and resolution inspection at your Palo Verde Nuclear Generating Station Units 1, 2 and 3 and discussed the results of this inspection with you and other members of your staff. The results of this inspection are documented in the enclosed report.

The NRC inspection team reviewed the station's corrective action program and the station's implementation of the program to evaluate its effectiveness in identifying, prioritizing, evaluating, and correcting problems, and to confirm that the station was complying with NRC regulations and licensee standards for corrective action programs. Based on the samples reviewed, the team determined that your staff's performance in each of these areas adequately supported nuclear safety.

The team also evaluated the station's processes for use of industry and NRC operating experience information and the effectiveness of the station's audits and self-assessments. Based on the samples reviewed, the team determined that your staff's performance in each of these areas adequately supported nuclear safety.

Finally, the team reviewed the station's programs to establish and maintain a safety-conscious work environment, and interviewed station personnel to evaluate the effectiveness of these programs. Based on the team's observations and the results of these interviews the team found no evidence of challenges to your organization's safety-conscious work environment. Your employees appeared willing to raise nuclear safety concerns through at least one of the several means available.

No findings or violations of more than minor significance were identified during this inspection.

This letter, its enclosure, and your response (if any) will be made available for public inspection and copying at <http://www.nrc.gov/reading-rm/adams.html> and at the NRC Public Document

M. Laca

2

Room in accordance with Title 10 of the *Code of Federal Regulations* 2.390, "Public Inspections, Exemptions, Requests for Withholding."

Sincerely,

Ami N. Agrawal, Team Lead  
Inspection Programs & Assessment Team  
Division of Reactor Safety

Docket Nos. 05000528 and 05000529 and 05000530  
License Nos. NPF-41 and NPF-51 and NPF-74

Enclosure:  
As stated

cc w/ encl: Distribution via LISTSERV®

PALO VERDE NUCLEAR GENERATING STATION UNITS 1, 2 AND 3 – BIENNIAL PROBLEM IDENTIFICATION AND RESOLUTION INSPECTION REPORT 05000528/2021010 AND 05000529/2021010 AND 05000530/2021010 – DATED APRIL 28, 2021

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**U.S. NUCLEAR REGULATORY COMMISSION  
Inspection Report**

Docket Numbers: 05000528, 05000529 and 05000530

License Numbers: NPF-41, NPF-51 and NPF-74

Report Numbers: 05000528/2021010, 05000529/2021010 and 05000530/2021010

Enterprise Identifier: I-2021-010-0001

Licensee: Arizona Public Service Company

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

Location: Tonopah, AZ

Inspection Dates: March 01, 2021 to March 26, 2021

Inspectors: R. Azua, Senior Reactor Inspector  
D. Bollock, Senior Reactor Operations Engineer  
B. Correll, Reactor Inspector  
P. Vossmar, Senior Project Engineer

Approved By: Ami N. Agrawal, Team Lead  
Inspection Programs & Assessment Team  
Division of Reactor Safety

Enclosure

## **SUMMARY**

The U.S. Nuclear Regulatory Commission (NRC) continued monitoring the licensee's performance by conducting a biennial problem identification and resolution inspection at Palo Verde Nuclear Generating Station Units 1, 2 and 3, in accordance with the Reactor Oversight Process. The Reactor Oversight Process is the NRC's program for overseeing the safe operation of commercial nuclear power reactors. Refer to <https://www.nrc.gov/reactors/operating/oversight.html> for more information.

### **List of Findings and Violations**

No findings or violations of more than minor significance were identified.

### **Additional Tracking Items**

None.

## INSPECTION SCOPES

Inspections were conducted using the appropriate portions of the inspection procedures (IPs) in effect at the beginning of the inspection unless otherwise noted. Currently approved IPs with their attached revision histories are located on the public website at <http://www.nrc.gov/reading-rm/doc-collections/insp-manual/inspection-procedure/index.html>. Samples were declared complete when the IP requirements most appropriate to the inspection activity were met consistent with Inspection Manual Chapter (IMC) 2515, "Light-Water Reactor Inspection Program - Operations Phase." The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel to assess licensee performance and compliance with Commission rules and regulations, license conditions, site procedures, and standards.

## OTHER ACTIVITIES – BASELINE

### 71152B - Problem Identification and Resolution

#### Biennial Team Inspection (IP Section 02.04) (1 Sample)

- (1) The inspectors performed a biennial assessment of the licensee's corrective action program, use of operating experience, self-assessments and audits, and safety conscious work environment.
  - **Corrective Action Program Effectiveness:** The inspectors assessed the corrective action program's effectiveness in identifying, prioritizing, evaluating, and correcting problems. The inspectors also conducted a five-year review of the licensee's ultimate heat sink/spray ponds.
  - **Operating Experience, Self-Assessments and Audits:** The inspectors assessed the effectiveness of the station's processes for use of operating experience, audits and self-assessments.
  - **Safety Conscious Work Environment:** The inspectors assessed the effectiveness of the station's programs to establish and maintain a safety-conscious work environment.

## INSPECTION RESULTS

Assessment	71152B
<u>Effectiveness of Problem Identification:</u> Based on the samples reviewed, the team determined that the licensee's performance in this area adequately supported nuclear safety. Overall, the team found that the licensee was identifying and documenting problems at an appropriately low threshold that supported nuclear safety.	
<u>Effectiveness of Prioritization and Evaluation of Issues:</u> Overall, the team found that the licensee was appropriately prioritizing and evaluating issues to support nuclear safety. Of the samples reviewed, the team found that the licensee correctly characterized each condition report as to whether it represented a condition adverse to quality, and then prioritized the evaluation and corrective actions in accordance with program guidance.	

Effectiveness of Corrective Actions: Overall, the team concluded that the licensee's corrective actions supported nuclear safety. Specifically, the Palo Verde Nuclear Generating Station developed effective corrective actions for the problems evaluated in the corrective action program and generally implemented these corrective actions in a timely manner commensurate with their safety significance.

- As part of this inspection, the team selected the plant's ultimate heat sink/spray ponds for a focused review within the corrective action program. For these systems, the team performed sample selections of condition reports, looking at the adequacy of the licensee's evaluation process for determining which items are placed in the corrective action process, and the corrective actions taken. The team also reviewed the licensee's use of operational experience and the Part 21 process' with respect to this system. As a result of the off-site nature of this inspection, due to COVID-19 restrictions at the time of the inspection, the team was not able to walk down portions of these systems. However, the team did not identify any concerns with this system that were not already being addressed by the station's monitoring and corrective action programs.

Corrective Action Program Assessment: Based on the samples reviewed, the team determined the licensee's corrective action program complied with regulatory requirements and self-imposed standards, and the licensee's implementation of the corrective action program adequately supported nuclear safety. The team found that management's oversight of the corrective action program process was effective.

Assessment	71152B
<p><u>Operating Experience:</u> The team reviewed a variety of sources of operating experience including Part 21 notifications and other vendor correspondence, NRC generic communications, and publications from various industry groups including Institute of Nuclear Power Operations (INPO) and Electric Power Research Institute (EPRI). The team determined that the Palo Verde Nuclear Generating Station is adequately screening and addressing issues identified through operational experience that apply to the station and that this information is evaluated in a timely manner once it is received.</p> <p><u>Self-Assessments and Audit Assessment:</u> The team reviewed a sample of the licensee's departmental self-assessments and audits to assess whether they regularly identified performance trends and effectively addressed them. The team also reviewed audit reports to assess the effectiveness of assessments in specific areas. Overall, the team concluded that the licensee had an effective departmental self-assessment and audit process. Audits were very detailed, thorough, and identified issues.</p>	

Assessment	71152B
<p><u>Safety-Conscious Work Environment:</u> The team interviewed eighteen individuals. The purpose of these interviews was (1) to evaluate the willingness of the licensee staff to raise nuclear safety issues, either by initiating a Condition Report or by another method, (2) to evaluate the perceived effectiveness of the corrective action program at resolving identified problems, and (3) to evaluate the licensee's safety-conscious work environment (SCWE). The focus group participants were from the Instrumentation and Controls organization, and the Security organization. Due to the challenges brought on by the COVID-19 pandemic, and the Palo Verde Nuclear Generating Station's performance in this area prior to this inspection, the NRC chose to limit the number of personnel interviewed. Overall, the Palo Verde Nuclear</p>	

Generating Station has an adequate Safety Conscious Work Environment.

Willingness to Raise Nuclear Safety Issues: In the assessed focus groups, the team found no evidence of challenges to SCWE. Individuals in these groups expressed a willingness to raise nuclear safety concerns and other issues through at least one of the several means available.

Overall, the team concluded that the Palo Verde Nuclear Generating Station maintained a healthy SCWE.

Employee Concerns Program: The team looked at the Palo Verde Nuclear Generating Station 's Employee Concerns Program (ECP). The team interviewed the ECP manager and discussed her cases. The team reviewed the ECP's investigative packages. Overall, the team did not identify any concerns with the program.

## **EXIT MEETINGS AND DEBRIEFS**

The inspectors verified no proprietary information was retained or documented in this report.

- On March 26, 2021, the inspectors presented the biennial problem identification and resolution inspection results to Maria Lacal and other members of the licensee staff.



**DOCUMENTS REVIEWED**

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
71152B	Calculations	13-JC-SG-0205	Uncertainty Calculation for MSIV / FWIV Air Reservoir Pressure Channels	7
	Corrective Action Documents		Evaluation 20-02912-008 "U2 Reactor Trip due to Loss of Both Main Feedwater Pumps"	0
		Condition Reports		16-08132, 16-08153, 17-16121, 17-16133, 18-00202, 18-00361, 18-00362, 18-00906, 18-04090, 18-02591, 18-02604, 18-02625, 18-04013, 18-04386, 18-04528, 18-04757, 18-05850, 18-06986, 18-07057, 18-07654, 18-07701, 18-08748, 18-08082, 18-08905, 18-09037, 18-09607, 18-09754, 18-10332, 18-10362, 18-10569, 18-10611, 18-10686, 18-10939, 18-11093, 18-11413, 18-11600, 18-11605, 18-12188, 18-12586, 18-12595, 18-12606, 18-12710, 18-12882, 18-13094, 18-13464, 18-13597, 18-13697, 18-14201, 18-14254, 18-14278, 18-14355, 18-14363, 18-14492, 18-14563, 18-14670, 18-14765, 18-14792, 18-14811, 18-14913, 18-15062, 18-15114, 18-15136, 18-15173, 18-15271, 18-15705, 18-15988, 18-15990, 18-16124, 18-16256, 18-16438, 18-16467, 18-16556, 18-16698, 18-16803, 18-17013, 18-17038, 18-17577, 18-17619, 18-17740, 18-17794, 18-17834, 18-18102, 18-18730, 18-18935, 18-19036, 19-00797, 19-01919, 19-01992, 19-02554, 19-02846, 19-02987, 19-03055, 19-03935, 19-04074, 19-04076, 19-04087, 19-04570, 19-04980, 19-05097, 19-05320, 19-05782, 19-05839, 19-06112, 19-06401, 19-06472, 19-07158, 19-07346, 19-07419, 19-07977, 19-08022, 19-09064, 19-09306, 19-09307, 19-09323, 19-09352, 19-09369, 19-09395, 19-10419, 19-10681, 19-10968, 19-11630, 19-11859, 19-11892, 19-12247, 19-12283, 19-12647, 19-12699, 19-12700, 19-13273, 19-13292, 19-14793, 19-14968, 19-16095, 19-16375, 19-16711, 19-17214, 19-17504, 19-17515, 19-18408, 19-18545, 19-18552, 19-18566, 19-18776, 20-01013, 20-01928, 20-02092, 20-02214, 20-02567, 20-02912, 20-03247, 20-03639, 20-03915, 20-04177, 20-04286,

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			20-04287, 20-04681, 20-04780, 20-04787, 20-04958, 20-04960, 20-05251, 20-05314, 20-05452, 20-05517, 20-05802, 20-05938, 20-06557, 20-06850, 20-07241, 20-07481, 20-07547, 20-07670, 20-07739, 20-08110, 20-08198, 20-08199, 20-08265, 20-09028, 20-09364, 20-09585, 20-09725, 20-09924, 20-10484, 20-10494, 20-10515, 20-10641, 20-10816, 20-11174, 20-11182, 20-11409, 20-11431, 20-11551, 20-11560, 20-11568, 20-11593, 20-11696, 20-11699, 20-11850, 20-11978, 20-12024, 20-12081, 20-12429, 20-12624, 20-13190, 20-13770, 20-14083, 20-14169, 20-14289, 20-14754, 20-15396, 20-15470, 20-16013, 20-16123, 20-16333, 21-00183, 21-00892, 21-01086, 21-01121, 21-02448, 21-02452,	
	Corrective Action Documents Resulting from Inspection	NCV 2019002-01 closure	LEVEL 2 EVALUATION CR 19-06854 in response to NRC NCV 2019002-01	0
NCV 2019003-01 closure		Evaluation 19-02688-007 Revision 2 "Unit 3B Diesel Fuel Oil Transfer Pump Trip"	Rev 2	
NRC FIN 2018003-01		LEVEL 3 EVALUATION REPORT 18-15727-001 and LEVEL 2 EVALUATION CR 18-10686 in response to NRC FIN 2018003-01	0	
	Engineering Changes		DMWO 3560653 Diesel Fuel Oil Storage Tank Cable Replacement (DF-1555)	
			EC 18-14201-010 "New knob design / installation method for 910 and 911 Series hand-switches."	0
		18-03753-003	Raise the Setpoint for the MSIV/FWIV Control Air Reservoir Low Pressure Alarm	0
	Engineering Evaluations	18-12188-007	Lack of O2 Analyzer Cells for GR System Becoming an Issue	03/15/2020
		18-18935-002	Unit 2 Polar Crane Modification Issues	0
		20-06850-003	Contractor Injury While Moving Portable A/C Unit	0
	Miscellaneous		Radiation Protection Event logs (2018-2020)	01/27/2021
			SI Shut Down Cooling Performance Criteria Formulation Bases	06/30/2008
			SI Tanks SITs Performance Criteria Formulation Bases	06/30/2008
			Spray Pond Maintenance Rule Performance Criteria Basis	3

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
			Worksheet	
			Station Blackout Generators Performance Criteria Formulation Bases	03/16/2011
			Spray Pond System Health Reports	01/01/2016-01/01/2021
			Main Steam Maintenance Rule Performance Criteria Basis Worksheet	5
			SI Containment Spray Performance Criteria Formulation Bases	06/30/2008
			SI High Pressure SI Performance Criteria Formulation Bases	06/30/2008
			Instrument Air Maintenance Rule Performance Criteria Basis Worksheet	3
		19-02987	Maintenance Rule a(1) Issue Tracking Form - MSIVs	0, 1
		February 2021 Station Quality Issue (SQI): Maintenance Material Storage	Station Quality Issue (SQI): Maintenance Material Storage	February 2021
		NGT90C000136	Technical Conscience Principles	09/13/2019
		SI Low Pressure SI Performance Criteria Formulation Bases	06/30/2008	
		SR-19-0037	Document review of U3R21 refueling outage work order instructions (SG blowdown valve replacement).	10/19/2019
		SR-19-0039	Observation of work associated with PB 1655 modification for replacement of existing Class 1E 727 relays.	10/22/2019
		SR-20-0032	Walkdown of Electrical Maintenance Shop (EMS) Level B storage area	10/19/2020
	Operability Evaluations	19-03935		
19-04277				
19-16834				
20-06195				

Inspection Procedure	Type	Designation	Description or Title	Revision or Date	
	Procedures	21-00373			
		01DP-0AP50	Project Management	6	
		01DP-0XX01	Control and Monitoring of Potential Tornado Borne Missiles	Revision 6	
		31MT-9RC23	Reactor Coolant Pump Sulzer Bingham Seal Replacement	42	
		40DP-9ZZ04	Time Critical Action (TCA) Program	16	
		40OP-9FT01	Feedwater Pump Turbine A	58	
		40OP-9FT02	Feedwater Pump Turbine B	55	
		60DP-0QQ23	Nuclear Assurance Stop Work and Escalation Processes	12	
		70DP-0MR01	Maintenance Rule	46	
		70DP-0RA03	Probabilistic Risk Assessment Model Control	18	
		81DP-0CC28	Classification of Structures, Systems, and Components	Revision 16	
		81DP-0EE10	Design Change Process	50	
		AP50-55	Complexity Evaluation	2	
		EDG 01	Engineering Human Performance Tools	14	
		IP-ENG-001	Standard Design Process	2	
	Self-Assessments			Audit Plan and Report - Audit 2018-004 Training and Qualification	0
				Audit Plan and Report 2018-007 Radiation Safety	0
				Audit Plan and Report 2018-007 Radiation Safety	0
				Audit Report Audit 2020-003 Nuclear Training	0
		18-10703		3R20 Modifications Site Self Assessment	0
		19-0029		Design and Configuration Control Audit	0
		19-021		Design and Configuration Control Audit	0
		20-00078		Trending Engineering Projects Team Clock Reset Data	0
		20-04619		Boric Acid Corrosion Control Program Simple Self Assessment	0
		20-04628		MRV Flow Accelerated Corrosion Self Assessment	0
		2018-005		Maintenance and Modifications	
		2019-003		Engineering Programs Audit	0
		2019-004		Fire Protection	
		2019-007		Design Control and Configuration Management Audit	0
2020-004		Nuclear Fuels Audit	0		
2020-005		Maintenance and Modifications			

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
	Work Orders	5092504	Align ACTM card cages in CEDMCS cabinets	0
		5228646	Replace 3A SP Breaker	0
		5228728	Replace 1B SP Breaker	0
		5228750	Replace 2A SP Breaker	0