UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
1600 EAST LAMAR BOULEVARD
ARLINGTON, TEXAS 76011-4511

May 4, 2021

Ms. Maria L. Lacal
Chief Nuclear Officer
Arizona Public Service Company
P.O. Box 52034, MS 7602
Phoenix, AZ 85072-2034

SUBJECT: PALO VERDE NUCLEAR GENERATING STATION – TRIENNIAL FIRE PROTECTION INSPECTION REPORT 05000528/2021012, 05000529/2021012 AND 05000530/2021012

Dear Ms. Lacal:

On April 16, 2021, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at Palo Verde Nuclear Generating Station. The NRC inspectors discussed the results of this inspection with Mr. Todd Horton, Senior Vice President, Site Operations and other members of your staff. The results of this inspection are documented in the enclosed report.

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

Sincerely,

Nicholas H. Taylor
Digitally signed by Nicholas H. Taylor
Date: 2021.05.04 08:11:57 -05'00'

Nicholas H. Taylor, Chief
Engineering Branch 2
Division of Reactor Safety

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

Enclosure:
As stated

cc w/ encl: Distribution via LISTSERV®

PALO VERDE NUCLEAR GENERATING STATION – TRIENNIAL FIRE PROTECTION INSPECTION REPORT 05000528/2021012, 05000529/2021012 AND 05000530/2021012 – DATED MAY 4, 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:	05000528/2021012, 05000529/2021012 and 05000530/2021012
Enterprise Identifier:	I-2021-012-0000
Licensee:	Arizona Public Service Company
Facility:	Palo Verde Nuclear Generating Station
Location:	Tonopah, AZ
Inspection Dates:	March 29, 2021, to April 16, 2021
Inspectors:	G. Pick, Senior Reactor Inspector S. Makor, Reactor Inspector J. Mateychick, Senior Reactor Inspector
Approved By:	Nicholas H. Taylor, Chief Engineering Branch 2 Division of Reactor Safety

Enclosure

SUMMARY

The U.S. Nuclear Regulatory Commission (NRC) continued monitoring the licensee's performance by conducting a triennial fire protection inspection at Palo Verde Nuclear Generating Station, 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 in effect at the beginning of the inspection unless otherwise noted. Currently approved inspection procedures 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.

Starting on March 20, 2020, in response to the National Emergency declared by the President of the United States on the public health risks of the coronavirus (COVID-19), resident and regional inspectors were directed to begin telework and to remotely access licensee information using available technology. During this time, resident and regional baseline inspections were evaluated to determine if all or portions of the objectives and requirements stated in the inspection procedure could be performed remotely. If the inspections could be performed remotely, they were conducted per the applicable inspection procedure. In some cases, portions of an inspection procedure were completed remotely and on site. The inspections documented below met the objectives and requirements for completion of the inspection procedure.

REACTOR SAFETY

71111.21N.05 - Fire Protection Team Inspection (FPTI)

Structures, Systems, and Components (SSCs) Credited for Fire Prevention, Detection, Suppression, or Post-Fire Safe Shutdown Review (IP Section 03.01) (4 Samples)

The inspectors verified that components and/or systems will function as required to support the credited functions stated for each sample. Additional inspection considerations are located in the fire hazards analysis or safe shutdown analysis.

(1) Verified that operator actions can be accomplished as assumed in the fire probabilistic risk assessment analysis and safe shutdown analysis.

(2) Walked down the fire water system components including the fire water tank and fire pumps to inspect for deficient conditions.

(3) Evaluated readiness of the carbon dioxide fire suppression system protecting the essential switchgear rooms (Fire Areas 5A and 5B) in Unit 2.

(4) Ensured that post maintenance and surveillance activities for the selected fire areas and fire water systems were performed as scheduled.

Fire Protection Program Administrative Controls (IP Section 03.02) (2 Samples)

The inspectors verified that the selected control or process is implemented in accordance with the licensee's current licensing basis. If applicable, ensure that the fire protection

program contains adequate procedures to implement the selected administrative control. Verify that the selected administrative control meets the requirements of all committed industry standards.

(1) Reviewed administrative controls of hot work, transient combustibles, and fire impairments.

(2) Ensured that the fire brigade training program met requirements and readiness of the licensee to combat fires.

Fire Protection Program Changes/Modifications (IP Section 03.03) (2 Samples)

The inspectors evaluated the licensee's procedures controlling modifications and procedure revisions for adequacy in reviewing potential impacts to the fire protection program.

(1) Reviewed fire protection configuration review requests associated with plant modifications.

(2) Reviewed fire protection change review requests associated with procedure changes.

INSPECTION RESULTS

No findings were identified.

EXIT MEETINGS AND DEBRIEFS

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

- On April 16, 2021, the inspectors presented the triennial fire protection inspection results to Mr. Todd Horton, Senior Vice President, Site Operations and other members of the licensee staff.

DOCUMENTS REVIEWED

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
71111.21N.05	Calculations	13-MC-FP-0316	10 CFR 50, Appendix R, Manual Action Feasibility	12
		13-MC-FP-0317	10 CFR 50, Appendix R, Operational Considerations	11
		13-MC-FP-0318	10 CFR 50, Appendix R, III.G/III.L Compliance Assessment	13
		13-MC-FP-0320	10 CFR 50, Appendix R, Multiple Spurious Operations Analysis	0
		13-NS-F001	Fire Probabilistic Risk Assessment - Plant Boundary Definition and Partitioning	1
		13-NS-F002	Fire Probabilistic Risk Assessment - Equipment Selection	1
		13-NS-F004	Fire Probabilistic Risk Assessment - Quantification and Screenings	1
		13-NS-F006	Fire Probabilistic Risk Assessment - Ignition Frequencies Analysis	1
		13-NS-F007	Fire Probabilistic Risk Assessment - Zone of Influence (ZOI)	1
		13-NS-F009	Fire Probabilistic Risk Assessment - Fire Scenario Selection and Seismic-Fire Interactions (FSS/SF)	1
		13-NS-F010	Fire Probabilistic Risk Assessment - Post-Fire Human Reliability Analysis (HRA)	1
		NN345-A00021	Evaluation of the Development and Timing of Hot Gas Layer Conditions in Generic Palo Verde Fire Compartments with Secondary Combustibles (0001-0014-002-002, R1)	0
		TA-13-C00-2000-004	CENTS Computer Code Analysis of the 10 CFR 50, Appendix R, Fire Protection Scenarios	3
	Corrective Action Documents		19-05839, 19-09863, 19-09864, 19-09865, 19-09878	
	Corrective Action Documents Resulting from Inspection		21-03715, 21-03723, 21-03739, 21-03740, 21-04029	
	Drawings		Chemical Volume Control System Overview	04/2020

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
		01-M-FPP-002, Sheet 1	P & I Diagram - Fire Protection System	19
		01-M-FPP-003	P & I Diagram - Fire Protection System	23
		01-M-FPP-006	P & I Diagram - Fire Protection System	16
		02-M-AFP-001, Sheet 1 of 2	P & I Diagram - Auxiliary Feedwater System	35
		02-M-AFP-001, Sheet 2 of 2	P & I Diagram - Auxiliary Feedwater System	35
		02-M-EWP-001	P & I Diagram - Essential Cooling Water System	28
		02-M-FPP-002, Sheet 1	P & I Diagram - Fire Protection System	18
		02-M-FPP-003	P & I Diagram - Fire Protection System	18
		02-M-FPP-004	P & I Diagram - Fire Protection System (CO2 System)	9
		02-M-FPP-006	P & I Diagram - Fire Protection System	14
		02-M-NCP-001	P & I Diagram - Nuclear Cooling Water System	17
		02-M-NCP-002	P & I Diagram - Nuclear Cooling Water System	13
		02-M-NCP-003	P & I Diagram - Nuclear Cooling Water System	13
		02-M-SIP-001	P & I Diagram Safety Injection & Shutdown Cooling System	55
		02-W-HJP-001	P & I Diagram - Control Building Heating, Ventilation, and Air Conditioning	21
		03-M-FPP-002	P & I Diagram - Fire Protection System	15
		03-M-FPP-003	P & I Diagram - Fire Protection System	19
		03-M-FPP-006	P & I Diagram - Fire Protection System	16
		13-A-ZYD-029, Sheet 2	Fire Protection Control Building Floor Plan at Elevation 100' - 0", Level 1	23
		13-E-MAA-001	Main Single Line Diagram	31
		AO-M-FPP-001	P & I Diagram - Fire Protection System	39
	Engineering Changes	07-00110-004	Strategic Modernization Program Ovation Distributed Control System Infrastructure and Cyber Security System	1
		19-00424-002	The TCCP# 5048813 in U1 Fuel Building that's being use for L-Insert Spent Fuel Pool (SFP) PC-1678 modification (DMWO 4887256)	01/29/19

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
		2020-00424	13-MC-FP-0803	16
		EDC 2019-00674	Fire Protection Change Regulatory Review	4
	Engineering Evaluations	18-10070-003	EWR to Further Evaluate Penetration Seal	07/24/18
		20-07630-003	Review Technical Issue Notifications for the Fire Protection EST3 and Fireworks System	06/09/2020
		20-14739-001	NRC Information Notice (IN) 2020-03, Recall of Mechanical Rate of Rise and Fixed Temperature Heat Detectors	11/10/2020
		20-16734-001	NRC Information Notice (IN) 2020-04, Operating Experience Related to Failure of Buried Fire Protection Main Yard Piping	12/28/2020
		EE 17-15769-001	Fire Protection Change Regulatory Review (FPCRR)	1
		EE 18-08959-002	Fire Protection Change Regulatory Review (FPCRR)	2
		EE 19-01360-056	Fire Protection Change Regulatory Review (FPCRR)	5
	Miscellaneous		Fire Protection Design Basis Manual	15
			List of Modifications Associated with Fire Protection	
			Licensing Alternatives for Resolution of Operator Manual Actions (OMAs) for Multiple Spurious Operations (MSOs)	05/12/2012
			Top 10 risk significant systems from the Fire Probabilistic Risk Assessment based on contribution to core damage frequency and on contribution to large early release frequency	01/21/2021
			Description of fire modeling key inputs and associated studies related to essential switchgear room Train A and the turbine-driven auxiliary feedwater pump	
		1024831	CAFTA - Fault Tree Analysis System, Version 6.0	12/2021
		13-LS-A112	PVNGS Aging Management Program Evaluation Report - Fire Protection-B.2.1.12, NUGEG 1801 Program XI.M26	0
		13-LS-A113	PVNGS Aging Management Program Evaluation Report-Fire Water System-B2.1.13, NUREG 1801 Program XI.M27	0
		13-LS-A116	PVNGS Aging Management Program Evaluation Report-One Time Inspection -B2.1.16, NUREG 1801 Program XI.M32	2

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
		13-LS-A117	PVNGS Aging Management Program Evaluation Report-Selective Leaching of Materials-B2.1.17, NUREG Program XI.M33	1
		13-LS-A118	PVNGS Aging Management Program Evaluation Report-Buried Piping and Tanks Inspection-B2.1.18, NUREG 1801 Program XI.M34	0
		13-MS-A83	NFPA Code Applicability and Conformance Review	9
		3002010659	FRANX Software Manual, Version 4.4	07/2017
		NLR20S010402	Licensed Operator Continuing Training Simulator Scenario	01/16/2020
		NLR21S020400	Licensed Operator Continuing Training Simulator Scenario	02/23/2021
		NNR20C050600	Non-Licensed Operator Continuing Training Simulator Scenario	08/12/2020
		NUREG/CR-6850, v1	EPRI/NRC-RES Fire PRA Methodology for Nuclear Power Facilities, Volume 1: Summary & Overview	09/2005
		NUREG/CR-6850, v2	EPRI/NRC-RES Fire PRA Methodology for Nuclear Power Facilities, Volume 2: Detailed Methodology	09/2005
		PR-0904	Fire Protection Program Requirement Description	2
		Supplement 1 to NUREG/CR-6850	Fire Probabilistic Risk Assessment Methods Enhancements	12/2009
		Technical Requirements Manual Section T3.11	Fire Protection	62
	Procedures	14DP-0FP01	Firewatch Requirements	14
		14DP-0FP01	Firewatch Requirements	14
		14DP-0FP02	Fire System Impairments and Notifications	26
		14DP-0FP02	Fire Systems Impairments and Notifications	26
		14DP-0FP13	Fire Protection System Status Control	14
		14DP-0FP33	Control of Transient Combustibles	31
		14DP-0FP36	Hot Work Permit	24
		14DP-0FP43	Fire Protection Program Responsibilities, Authorities, and Management Expectations	2

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
		14DP-0FP44	Fire Protection Test Program Requirement	5
		14DP-0FP46	Fire Protection Impact Screening	2
		14DP-0TR01	Fire Department Training Program Description	22
		14DP-0TR02	Fire Department Training Program Administration	30
		14FT-0FP04	Annual Fire Water Loop Test	25
		14FT-0FP05	Monthly Diesel Driven Fire Pump Start and Run	25
		14FT-0FP34	Fire Hydrant Street Key Flush & Post Indicator Valve Operational Testing Water Reclamation Facility	2
		14FT-1FP02	Motor Driven Fire Pump Start and Run	14
		14FT-2FP03	Fire Water Valve Verification	17
		14FT-2FP04	Fire Protection Valve Cycling	16
		14FT-2FP05	Unit 2 Wet Pipe, Deluge and Pre-Action System Inspection	3
		14FT-2FP34	Fire Hydrant Street Key Flush & Post Indicator Valve Operational Testing Unit 2	2
		14FT-9FP04	Annual Fire Pump Test	19
		14FT-9FP08	CO2 Fire Suppression System Functional Test	19 & 21
		14FT-9FP28	FPN-Spray and/or Sprinkler System Functional Test	24
		14FT-9FP29	CO2 Fire Suppression System Valve and Test Switch Position Verification	10
		14FT-9FP65	Appendix R/FTS Fire Barrier Surveillance (for Walls, Floors/Ceilings and Raceways)	14
		1DP-0FP38	Fire Protection Test Program	17
		22DP-0AC03	Digital Assessments	5
		33FT-9FP01	Appendix R and Technical Requirements Manual Fire Damper Surveillance	11
		38FT-9QK14	Fire Detection/Protection System Supervised Circuits Test and Functional Test - Carbon Dioxide Panels	14
		3FT-9FP04	Appendix A Fire Damper Surveillance Test	11
		40AO-9ZZ19	Control Room Fire	42
		40DP--9ZZ04	Time Critical Action (TCA) Program	16
		40DP-9ZZ17	Control of Doors, Hatches and Floor Plugs	65
		73DP-9EE05	One-Time Inspection Program	2

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
		73DP-9EE06	One-Time Inspection for Selective Leaching Degradation of Components	3
		73DP-9EE07	Internal Surfaces Inspection	1
		81DP-0DC17	Temporary Configuration Changes	45
		81DP-0EE02	Design Change Request	16
		81DP-0EE10	Design Change Process	49
		81DP-0ZZ01	Civil System, Structure, and Component Monitoring Program	25
		83DP-0AP01	Buried Piping and Tanks Program	9
		IP-ENG-001	Standard Design Process Overview	2
		PR-0904	Program Requirement Description - Fire Protection	2
		STP M-65	Sprinkler/Deluge System Visual Verifications	22
	Work Orders		2765970, 4443275, 4580980, 4946829, 4946860, 4973747, 4973749, 4981416, 5007899, 5007900, 5030240, 5048552, 5065781, 5071664, 5072404, 5073224, 5074929, 5091039, 5152582, 5156565, 5164350, 5164555, 5167697, 5169459, 5173126, 5178911, 5179302, 5180651, 5182685, 5183112, 5189568, 5264169, 5317536, 5319595	