



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
REGION IV  
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December 16, 2008

Randall K. Edington, Executive  
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SUBJECT: PALO VERDE NUCLEAR GENERATING STATION, UNITS 1, 2, AND 3 –  
NRC EXAMINATION REPORT 05000528/2008301; 05000529/2008301;  
05000530/2008301

Dear Mr. Edington:

On November 14, 2008, the U.S. Nuclear Regulatory Commission (NRC) completed an examination at Palo Verde Nuclear Generating Station. The enclosed report documents the examination findings, which were discussed on November 14, 2008, with Mr. Grover Hettel, Operations Director, and other members of your staff.

The examination included the evaluation of ten applicants for reactor operator licenses, six applicants for instant senior operator licenses and three applicants for upgrade senior operator licenses. The written examinations and operating tests were developed using NUREG-1021, "Operator Licensing Examination Standards for Power Reactors," Revision 9, Supplement 1. The license examiners determined that all of the applicants satisfied the requirements of 10 CFR Part 55, and the appropriate licenses have been issued.

No findings of significance were identified during this examination.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

Sincerely,

*/RA/*

Ryan E. Lantz, Chief  
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Division of Reactor Safety

Dockets: 50-528; 50-529; 50-530  
Licenses: NPF-41; NPF-51; NPF-74

Arizona Public Service Company - 2 -

Enclosure:

NRC Examination Report 05000528/2008301; 05000529/2008301; 05000530/2008301

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SUNSI Review Completed: TOM    ADAMS:  Yes     No    Initials: TOM  
 Publicly Available     Non-Publicly Available     Sensitive     Non-Sensitive

ML083510485

SOE:OB	OE:OB	SOE:OB	SOE:OB	SRI:PSB2
TMcKernon	GApger	BTLarson	S Garchow	J. Drake
<b>/RA/</b>	<b>/RA/</b>	<b>/RA/</b>	<b>/RA/</b>	<b>/RA/</b>
12/08/08	12/08/08	12/08/08	12/08/08	12/16/08
RIII:SOE:OB	DRP:D	C:OB		
R. Walton	MHay	RELantz		
<b>/RA via E/</b>	<b>DProulx for /RA/</b>	<b>/RA/</b>		
12/12/08	12/15/08	12/16/08		

EXAMINATION REPORT  
U.S. NUCLEAR REGULATORY COMMISSION  
REGION IV

Dockets: 50-528, 50-529, 50-530

Licenses: NPF-41, NPF-51, NPF-74

Report: 05000528/2008301, 05000529/2008301, 05000530/2008301

Licensee: Arizona Public Service Company

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

Location: 5951 S. Wintersburg Road  
Tonopah, Arizona

Dates: November 7-14, 2008

Inspectors: T. O. McKernon, Chief Examiner, Operations Branch  
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Approved By: Ryan E. Lantz, Chief  
Operations Branch  
Division of Reactor Safety

## SUMMARY OF FINDINGS

ER 05000528/2008301; 05000529/2008301; 05000530/2008301; November 7-14, 2008; Palo Verde Nuclear Generating Station; Initial Operator Licensing Examination Report.

NRC examiners evaluated the competency of ten applicants for reactor operator licenses, six applicants for instant senior operator licenses and three applicants for upgrade senior operator licenses at Palo Verde Nuclear Generating Station. The licensee developed the examinations using NUREG-1021, "Operator Licensing Examination Standards for Power Reactors," Revision 9, Supplement 1. The written examination was administered by the licensee on November 7, 2008. NRC examiners administered the operating tests on November 10-14, 2008. The examiners determined that all of the applicants satisfied the requirements of 10 CFR Part 55, and the appropriate licenses have been issued.

A. NRC-Identified and Self-Revealing Findings

No findings of significance were identified.

B. Licensee-Identified Violations

None.

## REPORT DETAILS

### 4. OTHER ACTIVITIES (OA)

#### 4OA5 Other Activities (Initial Operator License Examination)

##### .1 License Applications

###### a. Scope

The NRC examiners reviewed all of the license applications submitted to ensure the applications reflected that each applicant satisfied relevant license eligibility requirements. The applications were submitted on NRC Form 398, "Personal Qualification Statement," and NRC Form 396, "Certification of Medical Examination by Facility Licensee." The examiners also audited four of the license applications in detail to confirm that they accurately reflected the subject applicant's qualifications. This audit focused on the applicant's experience and on-the-job training, including control manipulations that provided significant reactivity changes.

###### b. Findings

No findings of significance were identified.

##### .2 Operator Knowledge and Performance

###### a. Examination Scope

On November 7, 2008, the licensee proctored the administration of the written examinations to all nineteen applicants. The licensee staff graded the written examinations, analyzed the results, and presented their analysis to the NRC on November 14 and 21, 2008.

The NRC examination team administered the various portions of the operating test to all nineteen applicants on November 10-14, 2008. The ten applicants for reactor operator licenses participated in two dynamic simulator scenarios, a control room and facilities walkthrough test consisting of 11 system tasks, and an administrative test consisting of 4 administrative tasks. The six applicants seeking an instant senior operator license participated in two dynamic simulator scenarios, a control room and facilities walkthrough test consisting of 10 system tasks, and an administrative test consisting of 5 administrative tasks. The three applicants for upgrade senior operator licenses participated in two dynamic simulator scenarios, a control room and facilities walkthrough test consisting of 5 system tasks, and an administrative test consisting of 5 administrative tasks.

###### b. Findings

All of the applicants passed all parts of the operating test. All of the applicants passed the written examination. For the written examinations, the reactor operator applicants' average score was 90.1 percent and ranged from 83.8 to 98.6 percent; the senior operator applicants' average score was 79.1 percent and ranged from 72 to 92 percent. The overall written examination average was 89.1 percent. The text of the examination

questions, the licensee's examination analysis, and the licensee's post-examination comments may be accessed in the ADAMS system under the accession numbers noted in the attachment.

Chapter ES-403 and Form ES-403-1 of NUREG-1021 require the licensee to analyze the validity of any written examination questions that were missed by half or more of the applicants. The licensee conducted this performance analysis for five questions that met this criterion and submitted the analysis to the chief examiner. The written exam analysis determined 5 questions ( 1 RO and 4 SRO) were missed by greater than 50% of the applicants. One question was deleted from the examination, and two of the question answers were changed as a result of post-examination review by the chief examiner. One question answer was changed due to an administrative error during pre-examination editing. The remainder of the questions were unchanged.

The licensee recommendations and the NRC responses follow:

#### Reactor Operator Question 11

Given the following conditions:

- Main Spray valves 100E & 100F failed open
- SIAS/CIAS/MSIS automatically initiated
- Offsite power was lost when the reactor tripped
- Offsite power has been restored
- PZR level is 7% and slowly increasing
- RCS Tcold temperature is 510°F
- RCS Thot temperature is 520°F
- REP CET temperature is 550°F
- RCS pressure is 1044 psia

The RCS is currently ....

- A. 24°F subcooled. HPSI flow may be throttled at the current RCS conditions.
- B. At saturation conditions. HPSI flow may be throttled if RCS pressure is raised to 1350 psia.
- C. 24°F subcooled. RCP restart is permitted per Standard Appendix 1 at the current RCS conditions.
- D. At saturation conditions. RCP restart is permitted per Standard Appendix 1 if RCS pressure is raised to 1350 psia.

The licensee recommended that this question be deleted. The original answer choice was choice D. However, the stem conditions for the question contains "PZR level is 7% and slowly increasing." For answer choice D to be correct, PZR level must be between 36-67% per Appendix 1, to procedure 40EP-9EO10. As such, there is no correct choice.

**NRC Response:** Based on the review of the reference stated, the NRC has concluded that the question, as written, has no correct answer choice and should be deleted. The NRC concurs with the licensee's recommendation.

### Senior Reactor Operator Question 1

Given the following conditions:

- Unit 1 was manually tripped 10 minutes ago due to lowering Pzr pressure and level
- SIAS/CIAS/MSIS have properly initiated
- ADVs are maintaining T-cold at 551°F
- RCS pressure is stable at 1500 psia
- HPSI flow is adequate
- RU-148 is reading 7.1E +06 mrem/hr
- RU-149 is reading 7.2E +06 mrem/hr
- Wind is from 210°

What (if any) Protective Action Recommendations (PARs) should be made for these conditions?

- A. No PARs are required
- B. Shelter within a 2-mile radius
- C. Evacuation for a 2-mile radius and 5 miles in sectors A-B-C
- D. Evacuation for a 2-mile radius and 5 miles in sectors B-C-D

The licensee changed the conditions in the stem of the question during final examination editing, but did not change the answer key as expected. This was an administrative error only.

**NRC Response:** The NRC agreed with the licensee's revision to the answer key based upon the changes to the questions stem conditions. The correct answer is choice "C" in lieu of "B".

### Senior Reactor Operator Question 5

Given the following conditions:

- Unit 1 was manually tripped from 100% power
- RU-142 (N-16 Main steam Line Monitor) channel 1 was reading 92 cpm at the time of the trip
- RU-142 (N-16 Main steam Line Monitor) channel 2 was reading 96 cpm at the time of the trip
- RCS pressure 2150 psia and slowly lowering
- Pressurizer level 31% and recovering
- SG 1 level is 65% WR and lowering
- SG 2 level is 60% WR and lowering
- NAN-S01 is de-energized
- PBA-S03 is de-energized
- NNN-D11 is de-energized

- RCS Thot is 565°F and slowly lowering
- RCS Tcold is 562°F and slowly lowering
- Main Feedwater flow is 0 gpm to each SG

The CRS should enter ...

- A. Reactor Trip (40EP-9EO02) and stabilize Tcold 560 to 570 °F
- B. Loss of All Feedwater (40EP-9EO06) and restore SG levels to 45 to 60% NR
- C. Steam Generator Tube Rupture (40EP-9EO04) and lower Thot to less than 540°F
- D. Loss of Offsite Power/Loss of Forced Circulation (40EP-9EO07) and initiate MSIS

The licensee recommended that the correct answer choice for this question be changed from "A" to "B". The conditions in the stem of the question indicate that the Reactor Trip Safety Function acceptance criteria for (RCS Heat Removal) not being met, (i.e., At least one SG has level 45-60%NR and feedwater is available).

**NRC Response:** The NRC agrees with the licensee's recommendation to change the correct answer choice to "B". Based upon conditions in the stem of question there are reasonable indications that the Standard Post Trip Actions have been completed and based upon SG1 and SG2 levels on the wide range scales, and no narrow range level indications, and no feedwater flow to the steam generators; inference is made that a Loss of all Feedwater condition exists.

#### Senior Reactor Operator Question 21

Given the following conditions:

- Unit 1 is operating at rated power
- DG "A" is under clearance and OOS for planned maintenance
- A low level alarm is received on the "B" Essential Chill water surge tank
- Area 3 reports a leak on the HPSI pump room "B" Essential ACU, HAB-Z01
- Chill Water (EC) is isolated to HAB-Z01

Which one of the following correctly reflects the current HPSI pump status?

- A. HPSI pumps A/B are both Inoperable but available
- B. HPSI pumps A/B are both Inoperable and not available
- C. HPSI pump A is Operable and available provided offsite power is available to PBA-S03
- D. HPSI pump B is Operable and available provided room temperature is maintained < 104 °F

The original answer choice was "A". The licensee recommended that both answer choices "A" and "C" be accepted as correct answers. Answer choice "A" is correct based on an inoperable "A" Diesel Generator concurrent with a loss of the HPSI "B" essential room cooler. Both condition B of LCO 3.8.1 and Surveillance Test 41ST-1ZZ02 require both trains of emergency core cooling systems to be declared inoperable within 4 hours.

Answer choice "C" is correct based on the 4 hour allowance within both the ST and LCO. The LCO allows a 4 hour window to restore either train of ECCS before both trains must be declared inoperable. Since no time frame is referenced in the stem, both answers A and C are correct.

**NRC Response:** The NRC accepted the licensee's recommendation. No time periods were provided in the stem of the question. As such, both "A" and "C" are correct answers.

The recommendations were factored into the grading of the written examinations.

### .3 Initial Licensing Examination Development

#### a. Examination Scope

The licensee developed the examinations in accordance with NUREG-1021, Revision 9, Supplement 1. All licensee facility training and operations staff involved in examination preparation and validation were on a security agreement. The licensee submitted the outlines for the written examinations and operating tests on August 29, 2008. The NRC reviewed the outlines against the requirements and provided comments to the licensee. The licensee submitted the draft examination package on September 26, 2008. The NRC reviewed the draft examination package against the requirements and provided comments to the licensee on the examination on September 4, 2008. The NRC examination team conducted an onsite validation of the operating test and provided further comments during the week of October 10, 2008. The licensee satisfactorily completed comment resolution on October 6, 2008.

#### b. Findings

The NRC approved the initial examination outlines and advised the licensee to proceed with development of the written examinations and operating tests.

The examiners determined that the written examinations and operating tests initially submitted by the licensee were within the range of acceptability expected for a proposed examination.

No findings of significance were identified.

### .4 Simulation Facility Performance

#### a. Examination Scope

The NRC examiners observed simulator performance with regard to plant fidelity during the examination validation and administration.

b. Findings

No findings of significance were identified.

.5 Examination Security

a. Examination Scope

The NRC examiners reviewed examination security for examination development during both the onsite preparation week and examination administration week for compliance with 10 CFR 55.49 and NUREG-1021. Plans for simulator security and applicant control were reviewed and discussed with licensee personnel.

b. Findings

No findings of significance were identified.

4OA6 Meetings, Including Exit

The chief examiner presented the examination results to Mr. Joe Waid, Training Director on November 20, 2008. The licensee acknowledged the findings presented.

The licensee did not identify any information or materials used during the examination as proprietary.

ATTACHMENT: SUPPLEMENTAL INFORMATION

## **SUPPLEMENTAL INFORMATION**

### **KEY POINTS OF CONTACT**

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#### **NRC Personnel**

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### **ADAMS DOCUMENTS REFERENCED**

Accession No. ML083330126 - FINAL Written Examination  
Accession No. ML083330155 - FINAL Operating Test  
Accession No. ML083330173 - FINAL Post Examination Comments