In accordance with examination security guidance contained in NUREG 1021, Revision 11, APS requests that the material contained in the enclosures be withheld from public disclosure until after the examinations are complete.

NUREG 1021/10 CFR 55

Palo Verde
Nuclear Generating Station
P.O. Box 52034
Phoenix, AZ 85072
Mail Station 7636
Tel 623 393 5379

102-08203-MEK/JR
May 14, 2021

S. A. Morris, Regional Administrator
U.S. Nuclear Regulatory Commission, Region IV
1600 E. Lamar Blvd.
Arlington, TX 76011-4511

Reference: NRC letter, "Palo Verde Nuclear Generating Station, Units 1, 2, and 3 – Notification of NRC Initial Operating Licensing Examination, dated June 29, 2020" [Agencywide Documents Access and Management System (ADAMS) Accession No. ML20180A002]

Dear Sir:

Subject: **Palo Verde Nuclear Generating Station (PVNGS)**
Units 1, 2, and 3 Docket Nos. STN 50-528, 50-529, 50-530
2021 Post-Exam Comments and Analysis Submittal

Arizona Public Service Company (APS) management has completed its review of the initial operator licensing examination conducted April 26 through May 6, 2021. Per NUREG 1021, Rev 11, Section ES-501 (C.1.b), this letter provides the required post examination documents. There were no substantive comments made by the applicants following the written examination. Enclosed examination documents are:

1. HARD COPY:
    - Graded written examinations including each applicant's original answer sheets
    - Original exam cover sheet for each applicant with grades filled in
    - A clean copy of each applicant's answer sheet (made prior to grading)
    - Completed ES-403-1, Written Examination Grading Quality Checklist
2. ELECTRONIC COPY (on CD):
    - Master examination(s) and answer key(s), annotated to indicate any changes made while administering and grading the examinations(s) – (No changes made)
    - Any questions asked by and answers given to the applicants during administration of the written exam

In accordance with examination security guidance contained in NUREG 1021, Revision 11, APS requests that the material contained in the enclosures be withheld from public disclosure until after the examinations are complete.

- All examination administration or post-examination review comments made by the facility licensee and the applicants after the written examination and/or operating tests
- Written examination seating chart
- Results of any written exam performance analysis that was performed, with recommended substantive changes
- Justification for any recommended exam changes (no changes recommended)
- ES-201-3, Examination Security Agreement
- Copies of condition reports written or to be written as a means to improve exam processes, procedure quality, training quality, exam security, simulator fidelity, and any other general topics that relate to the exam process

As discussed with the Chief Examiner, APS will obtain post-exam signatures from individuals who had detailed knowledge of any part of the operating tests or written examination and electronically forward completed Form(s) ES-201-3, "Examination Security Agreement," with the appropriate pre- and post-examination signatures.

In accordance with examination security guidance contained in NUREG 1021 Revision 11 and ES-201, APS requests that the NRC Region IV office delay public release of the proposed and final operating test, written examinations and answer keys for a period of 2 years from the date of the examination completion.

No commitments are being made to the NRC by this letter.

If you have any questions or require additional information, please contact Jarred J. Shaver, Nuclear Training Section Leader, at (623) 393-4519.

Sincerely,

Elkinton, Delbert C(Z34657)

Digitally signed by Elkinton, Delbert C(Z34657)
DN: cn=Elkinton, Delbert C(Z34657)
Reason: For MEK, per delegation
Date: 2021.05.14 10:47:00 -07'00'

Matthew E. Kura
Manager, Regulatory Affairs, Compliance

MEK/JR

In accordance with examination security guidance contained in NUREG 1021, Revision 11, APS requests that the material contained in the enclosures be withheld from public disclosure until after the examinations are complete.

Enclosures:

1. HARD COPY:
    - Graded written examinations including each applicant's original answer sheets
    - Original exam cover sheet for each applicant with grades filled in
    - A clean copy of each applicant's answer sheet (made prior to grading)
    - Completed ES-403-1, Written Examination Grading Quality Checklist
2. ELECTRONIC COPY (on CD):
    - Master examination(s) and answer key(s), annotated to indicate any changes made while administering and grading the examinations(s) – (No changes made)
    - Any questions asked by and answers given to the applicants during administration of the written exam
    - All examination administration or post-examination review comments made by the facility licensee and the applicants after the written examination and/or operating tests
    - Written exam seating chart
    - Results of any written exam performance analysis that was performed, with recommended substantive changes
    - Justification for any recommended exam changes (no changes recommended)
    - ES-201-3, Examination Security Agreement
    - Copies of condition reports written or to be written as a means to improve exam processes, procedure quality, training quality, exam security, simulator fidelity, and any other general topics that relate to the exam process

cc: (w/o enclosure)
C. A. Peabody NRC Senior Resident Inspector for PVNGS

(w enclosure)
C. C. Osterholtz NRC Region IV, Chief Examiner
J. A. Bridges NRC Region IV, Licensing Assistant, Operations Branch

2021 PVNGS NRC Initial Written Exam Performance Analysis

*All question with a < 70% pass rate

Question 6		Given the following conditions: • Unit 1 is in MODE 4 • SDC is in service on Train 'B' using the 'B' LPSI Pump Subsequently: • The 'B' Spray Pond Pump tripped In order to restore SDC flow using the 'B' LPSI Pump, the crew should FIRST attempt to…
0%	A.	cross-tie Plant Cooling Water to 'B' Spray Pond Cooling Water to restore cooling to the 'B' EW Heat Exchanger
48%	B.	cross-tie 'B' Nuclear Cooling Water to 'B' Essential Cooling Water to restore cooling to the 'B' SDC Heat Exchanger
0%	C.	start and align the 'A' Spray Pond Pump to the 'B' EW Heat Exchanger to restore cooling to the 'B' EW Heat Exchanger
52%	**D.**	**place Train 'A' Spray Pond / Essential Cooling / Essential Chill Water in service and align the 'B' LPSI Pump to the 'A' SDC Heat Exchanger**
Analysis:		48% of the class missed this question, fairly equally amongst RO and SRO applicants. The misconception on this question was that cross-tying one system would be preferable to re-aligning 3 systems from one train to another. The crux of the question is that class equipment is always preferable to non-class equipment and the Lower Mode Functional Recovery procedure is written this way. Upon review of the LMFR lesson plan, this mitigating strategy is not strongly emphasized.
Conclusion:		Consider revising/enhancing the LMFR lesson plan to add/enhance information about the order of preference for equipment realignments following a loss of SDC.

Question 62		Given the following conditions: • Unit 2 is operating at 100% power • All inputs at the RRS Cabinet are selected to AVERAGE • CEDMCS Mode Selector Switch is in AUTO Subsequently: • ONE of the two Turbine First Stage Pressure inputs to the RRS system begins to fail LOW resulting in Tref lowering at a rate of 1°F/min Over the next 10 minutes, with NO operator action, how will the RRS system respond to this failure?
62%	**A.**	**CEAs will remain ARO due to an AMI signal being generated prior to any CEA movement**
14%	B.	CEAs will start inserting when Tavg-Tref difference reaches 3°F and continue inserting until operator action is taken
24%	C.	CEAs will start inserting when Tavg-Tref difference reaches 3°F, then stop inserting when the Tavg-Tref HI-LO alarm annunciates
0%	D.	CEAs will remain ARO due to the failed First Stage Pressure instrument being automatically removed from the comparison circuit prior to any CEA movement
Analysis:		During exam review, some members of the class indicated that they did not know the proportional relationship between TFSP, TLI, and Tref. As the question was explained, they all acknowledged that this was taught and that they knew the information at some point, but had forgotten the exact proportionalities and guess incorrectly during the exam.
Conclusion:		This information is sufficiently trained during the program, however since it is taught in systems training (~ 9-12 months prior to the NRC exam), it may be worth refreshing prior to station Audit and NRC exams in the future.

<table>
<tr><td colspan="2">Question 79</td><td>Given the following conditions:
Unit 1 is operating at 100% power
The ‘A’ and ‘B’ Charging Pumps are running
VCT level is 40%
The following alarms have just annunciated on B03:
3A08A CHG HDR SYS TRBL
3A11B RCP SEAL INJ FLOW HI-HI OR LO
CHB-FI-212, Charging Pumps Discharge Header Flow, is indicating 25 gpm
The CRS has entered 40AO-9ZZ05, Loss of Charging or Letdown, Appendix G, Responding to Gas Binding of Charging Pumps
Per 40AO-9ZZ05, Loss of Charging or Letdown, the CRS should direct…
(1) the OATC to place _____ in Pull to Lock
(2) an AO to perform _____ to vent the affected Charging Pumps</td></tr>
<tr><td>38%</td><td>A.</td><td>(1) ONLY the ‘A’ and ‘B’ Charging Pumps
(2) Appendix H, Venting Charging Pumps and Header to the Vent Receiver</td></tr>
<tr><td>63%</td><td>B.</td><td>(1) ONLY the ‘A’ and ‘B’ Charging Pumps
(2) Appendix I, Venting Charging Pumps and Header to the Recycle Drain Header</td></tr>
<tr><td>0%</td><td>C.</td><td>(1) ALL three Charging Pumps
(2) Appendix H, Venting Charging Pumps and Header to the Vent Receiver</td></tr>
<tr><td>0%</td><td>D.</td><td>(1) ALL three Charging Pumps
(2) Appendix I, Venting Charging Pumps and Header to the Recycle Drain Header</td></tr>
<tr><td colspan="2">Analysis:</td><td>During exam review, the SROs felt that the question was fair, and they had simply forgotten which appendix is used and what condition that was based on (VCT level). They acknowledged that 40AO-9ZZ05 is very well trained and that they just didn’t go to that depth of study on this particular AOP prior to the exam.</td></tr>
<tr><td colspan="2">Conclusion:</td><td>It appears as though the training materials on this topic are sufficient and no further action is need for this topic.</td></tr>
</table>

<table>
<tr><td colspan="2">Question 81</td><td>Given the following conditions:
Unit 3 is operating at 100% power
• All Class 125 VDC components are operable
• Both Swing Chargers are in standby
Subsequently:
• At time = 0100: ‘A’ Battery Charger, PKA-H11, failed and has no output voltage
• At time = 0115: ‘A’ Battery, PKA-F11, output voltage dropped below the minimum required voltage for operability
• At time = 0130: ‘AC’ Swing Charger, PKA-H15, was aligned to PKA-M41
• At time = 0200: ‘A’ Battery, PKA-F11, output voltage was restored to minimum required voltage for operability
Based on the listed timeline of events, LCO 3.8.4, DC Sources – Operating, was INITIALLY NOT MET at ___(1)___ , and was subsequently MET AS SOON AS
___(2)___ .</td></tr>
<tr><td>38%</td><td>A.</td><td>(1) 0100
(2) the ‘AC’ Swing Charger was aligned to PKA-M41</td></tr>
<tr><td>63%</td><td>B.</td><td>(1) 0100
(2) ‘A’ Battery voltage was restored to minimum required voltage</td></tr>
<tr><td>0%</td><td>C.</td><td>(1) 0115
(2) the ‘AC’ Swing Charger was aligned to PKA-M41</td></tr>
<tr><td>0%</td><td>D.</td><td>(1) 0115
(2) ‘A’ Battery voltage was restored to minimum required voltage</td></tr>
<tr><td colspan="2">Analysis:</td><td>During exam review, the SROs who missed the question stated that they thought that LCO 3.8.4 was satisfied when the swing charger was aligned and that minimum voltage only pertained to LCO 3.8.6. They also felt that the question was a bit unfair for a closed book question as memorization of TS details seems unreasonable.</td></tr>
<tr><td colspan="2">Conclusion:</td><td>The material is trained well, however keeping the details of which specific information pertains to which LCO, for all of TS, can be challenging. The exam room will coordinate with LOIT staff prior to commencing development on the next NRC exam to discuss which TS information needs to be known from memory to ensure fair yet discriminating questions going forward.</td></tr>
</table>