

# FORM 9 – EXAM ITEM ANALYSIS

Exam/Item ID# 38207/37625 Title: 2021 Wolf Creek NRC (RO 1-75) (SRO 1-100)

Cycle/Date Evaluation Instrument Administered: 10/27/2021

Number of Trainees Evaluated: 10 RO / 5 SRO

<b>Section A – Any question receiving greater than 50% failure rate</b> <span style="float: right;"><input type="checkbox"/> N/A</span>			
List each question receiving greater than 50% failure rate.			
Question Number	Average Score (%)	Review Conclusion*	Corrective Action
79	20	G	Debriefed, Verified Lesson Plan Adequacy
83	40	G	Debriefed, Verified Lesson Plan Adequacy
63	40	G	Debriefed, Verified Lesson Plan Adequacy
66	40	B	Debriefed, IMPACTED LO1710100, Reactor Startup Review
*Review Conclusion		A. Insufficient training for the learning objective tested B. Learning objectives not adequately covered in the lesson plan C. Poorly worded or invalid learning objective D. Poorly worded or invalid test item or answer E. Incorrect answer in the exam key F. More than one correct answer G. Question acceptable H. Other (state reason in table or on additional sheet)	
<b>Section B – Greater than 25% overall exam failure</b> <span style="float: right;"><input checked="" type="checkbox"/> N/A</span>			
Conclusion Summary		Corrective Action	

Review performed by: Andrew Servaes Date: 11/1/2021

Approved by:  Date: 11/3/2021  
Training Supervision

# Exam Results

2021 Wolf Creek NRC, Rev 3

Test ID: 37625

79 (HM)

ID: LO157726

Points: 1.00

Given:

- A unit startup is in progress following a seven-day forced outage.
- Reactor power is at 1.5%.
- 'A' MFP has been placed online.
- MCB Annunciator 018A, NB01 BUS LOCKOUT Actuated.
- The crew entered OFN NB-030, LOSS OF AC EMERGENCY BUS NB01 (NB02).

Based on the given conditions, 1) What action should the crew take in response to rising S/G levels? and 2) What is the Technical Specification implication for performing this action?

Note:

- LCO 3.7.5, CONDITION A, One steam supply to TD AFW pump INOPERABLE.
- LCO 3.7.5, CONDITION B, One emergency suction supply to TD AFW pump INOPERABLE.
- LCO 3.7.5, CONDITION C, One AFW train INOPERABLE for reasons other than CONDITION A or B.

- A. 1) Stop the TD AFW Pump per SYS AL-120, MOTOR DRIVEN OR TURBINE DRIVEN AFW PUMP OPERATIONS.  
2) Enter LCO 3.7.5, COND A when TD AFP Steam Supply Valves are closed.
- B. 1) Stop the TD AFW Pump per SYS AL-120, MOTOR DRIVEN OR TURBINE DRIVEN AFW PUMP OPERATIONS.  
2) The TDAFW Pump remains OPERABLE per LCO 3.0.6 ONLY because CRS entered LCO 3.8.1, AC Sources - Operating, CONDITION A, One offsite circuit INOPERABLE. (U4)
- C. 1) Throttle TD AFW REG VLV CTRL(s) to control S/G Level.  
2) Enter LCO 3.7.5, COND C when TD AFP AFW REG VLV CTRL(s) are throttled. (U3) (U2) (U1)
- D. 1) Throttle TD AFW REG VLV CTRLS(s) to control S/G Level.  
2) TD AFW Pump remains OPERABLE when TD AFP AFW REG VLV CTRL(s) are throttled.

Answer: D

# Exam Results

2021 Wolf Creek NRC, Rev 3

Test ID: 37625

## Answer Explanation (1/5)

K/A Statement (059 / A2.01 – 4.1) Main Feed Water System (MFWS), Ability to (a) predict the impacts of the following on the MFWS and (b) based on those predictions, use procedures to correct, control, or mitigate the consequence of those abnormal operations: Actuation of AFW system. (CFR 43.2) (Tier 2/Group 1) (New/High/3) Answer choices sorted. Correct answer at D.

A. Distractor 1 (Secure the TD AFW Pump per SYS AL-120, and Enter LCO 3.7.5 COND A) is INCORRECT, but plausible. OFN NB-030, Step A36 provides direction to stop the TD AFW Pump per SYS AL-120 if it is NOT needed for Secondary Heat Sink. Per Basis LCO 3.7.5, The standby lineup for the TD AFW steam lines is when the main steam supply valves ABHV005 and ABHV-006, are closed and OPERABLE and the warmup valves, AB HV-0048 and ABHV0049 are open and OPERABLE. By performing a shutdown per SYS AL-120, OPERABILITY of the TD AFW Pump is maintained since Reactor Power is <10%. This choice is wrong because entry to LCO 3.7.5, COND A is NOT required.

B. Distractor 2 (Secure the TD AFW Pump per SYS AL-120, and TD AFW Pump remains OPERABLE per LCO 3.0.6 ONLY because the CRS entered LCO 3.8.1, COND A) is INCORRECT, but plausible. OFN NB-030, Step A36 provides direction to stop the TD AFW Pump if it is NOT needed for secondary Heat Sink. Per LCO 3.0.6, "When a supported system LCO is not met solely due to a support system LCO not being met, the Conditions and Required Action associated with the supported system are not required to be entered. Only the support system LCO ACTIONS are required to be entered." This choice is wrong since the application of LCO 3.0.6 only affects entry to conditions and required actions of the supported system made INOPERABLE solely due to INOPERABILITY of the Support System. The supported system is still INOPERABLE. In additions, LCO 3.8.1, COND A lists the TD AFW Pump as a Required Redundant Feature, so the TD AFW Pump is a specific example where supported system required actions are still required as a result of the INOPERABILITY of the Support System.

C. Distractor 3 (Throttle TD AFW RED VLV CTRL(s), Enter LCO 3.7.5, COND C) is INCORRECT, but plausible. This choice would be true if given Reactor Power was >10% and is specifically directed by SYS AL-120, Section 6.4 as part of the procedure to throttle flow to 25% prior to stopping the TD AFW Pump, after which the valves are restored to "Latch Detent Open" position, and LCO 3.7.5, COND C is exited. This choice is wrong because the TD AFW Pump remains OPERABLE with Reactor Power <10% RTP per LCO 3.7.5.

D. CORRECT (Throttle TD AFW REG VLV CTRLS(s), TD AFW Pump remains OPERABLE) Per OFN NB-030, Step A11, since given Reactor Power is <10% and TD AFW Pump is NOT needed for secondary heat sink, Step A11.d directs the crew to adjust Turbine Driven AFW Pump flow, as necessary, to control S/G levels. Per Basis, LCO 3.7.5, when power is  $\leq 10\%$  RTP, the TD AFW Pump remains OPERABLE with the discharge flow control valves throttled as needed to maintain S/G levels.

# Exam Results

2021 Wolf Creek NRC, Rev 3

Test ID: 37625

83 (HM)

ID: LO157515

Points: 1.00

Given:

- At 0800 on 10/25/2021, Chemistry sampled the Gas Decay Tank and presented a Release Permit to the Shift Manager for approval.
- Higher priority work caused the Gas Decay Tank release to be delayed.
- It is now 0900 on 10/26/2021 and the crew is ready to perform the Gas Decay Tank Release.

Based on these conditions, how should the crew proceed per AP 07B-001, RADIOACTIVE RELEASES?

- A. Commence the release. The existing Gas Decay Tank Release Permit is still valid with no additional samples required.
- B. Commence the release. Direct Chemistry to perform a sample at initiation to validate the Gas Decay Tank Release Permit requirements are still met.
- C. Direct Chemistry to re-sample the Gas Decay Tank and then perform the release using the existing Gas Decay Tank Release Permit. (U2)
- D. Direct Chemistry to re-sample the Gas Decay Tank and prepare a new gas tank release permit prior to performing the release. (I1) (U1)

Answer: A

## Answer Explanation (2/5)

K/A Statement (071 / 2.1.32 – 4.0) Waste Gas Disposal System (WGDS), Ability to explain and apply system precautions, limitations, notes, or cautions. (CFR 43.4) (Tier 2/Group 2) (New/Low/2) Answer choices sorted. Correct answer at A.

A. CORRECT (Immediately Release, no additional samples are required.) Per AP 07B-001, Section 6.2.3.3, the initiation of the discharge must occur within 48 hours of the sample. Since only 25 hours have elapsed since the sample was taken, the crew may immediately commence the release using the existing permit with no additional samples required.

B. Distractor 1 (Immediately release, take a sample at initiation.) is INCORRECT, but plausible. AP 07B-001, paragraph 4.8 specifies samples taken at initiation must be taken as soon as possible following release start, not to exceed 30 minutes. "At Initiation" samples are directed by AP 07B-001 for Continuous releases which is not applicable since the Gas Decay Tank release is a batch release.

C. Distractor 2 (Direct Sample and release with existing permit) is INCORRECT, but plausible. AP 07B-001, Section 6.2.3.3 directs resample to verify contents if discharge is not within 48 hours of sample. Since there is no way to document the new sample time on the existing Release Permit per AI 07B-039, Chemistry would be required to issue a new release permit if new sample data was obtained.

D. Distractor 3 (Re-sample and prepare a new release permit) is INCORRECT, but plausible. This choice would be true if more than 48 hours had elapsed from sample to readiness to initiate the batch release, in which case a new sample and new permit would be required to meet AP 07B-001 and AI 07B-039 requirements.

# Exam Results

2021 Wolf Creek NRC, Rev 3

Test ID: 37625

63 (HM)

ID: LO157355

Points: 1.00

Given:

- The crew tripped the reactor and actuated SI due to a SBLOCA.
- Off Site Power was lost when the unit tripped.
- MCB Annunciator 018C, NF039A S/D SEQ ACTUATED, is LIT.
- MCB Annunciator 021C, NF039B S/D SEQ ACTUATED, is LIT.
- The crew is performing EMG ES-03, SI TERMINATION, Step 5, **Reduce Charging Flow**.

Based on these conditions which of the following actions should the crew take per EMG ES-03?

- A. Stop one CCP and place in standby. (R4) (R2) (U3) (U2) (U4)
- B. Place one CCP handswitch in pull-to-lock.
- C. Verify NCP is running, stop both CCPs and place in standby. (I1)
- D. Verify NCP is running and place both CCP handswitches in pull-to-lock.

Answer: B

## Answer Explanation (4/10)

K/A Statement (WE02 / EA1.04 – 3.4) SI Termination, Ability to operate and/or monitor the following as they apply to the SI Termination: AC electrical distribution system. (CFR 41.8) (Tier 1/Group 2) (New/High/3)

Answer choices sorted short to long. Correct answer at B.

A. Distractor 1 (Stop one CCP and place in standby) is INCORRECT, but plausible. This action is directed by EMG ES-03, Step 5b if the S/D sequencers were NOT actuated. This choice is wrong by procedure direction and if attempted, the pump would auto restart until off site power was restored and the shutdown sequencer was reset.

B. CORRECT (Place one CCP in PTL) Per EMG ES-03, Step 5, if S/D Sequencers are actuated, the RNO directs placing all but one CCP handswitch in pull to lock.

C. Distractor 2 (Verify NCP running, stop both CCPs and place in standby) is INCORRECT, but plausible. The NCP is without power and both CCPs have a start signal from S/D sequencer so they must be placed in PTL if it is desired to secure them.

D. Distractor 3 (Verify NCP running and place both CCP handswitches in PTL) is INCORRECT, but plausible. The NCP is powered from bus PB03 which was lost with off-site power. If the NCP was running, EMG ES-03 directs stopping the NCP in step 6 after stopping one CCP in step 5. With active S/D sequencer, CCP handswitches need to be placed in PTL to prevent auto pump restart.

# Exam Results

2021 Wolf Creek NRC, Rev 3

Test ID: 37625

66 (HM)

ID: LO157361

Points: 1.00

A Reactor Startup is in progress per GEN 00-003, HOT STANDBY TO MINIMUM LOAD, ATTACHMENT E, Reactor Startup, from a forced outage in the middle of core life.

What condition will result in criticality occurring at a lower than estimated rod height?

- A. Steam pressure maintained 50 psig higher than normal no-load setting.
- B. CCW temperature lowered by 15°F due to a CCW System malfunction.
- C. Delaying startup from 10 to 14 days after trip from 100% equilibrium conditions. (R3)(R5)(U3)(I1)(U1)(U4)
- D. RCS boron concentration 50 ppm higher than that used in the ECP calculation.

Answer: B

## Answer Explanation (4/10)

K/A Statement (2.1.23 – 4.3), Ability to perform general and/or normal operating procedures during any plant conditions. (CFR 41.1) (Tier 3) (Modified/High/3)

Answer choices sorted short to long. Correct answer at B.

A. Distractor 1 (Steam pressure 50 psig higher than normal no-load setting) is INCORRECT, but plausible. A higher steam pressure results in a higher temperature which has a negative effect on moderation due to lower density of the RCS. This would tend to raise rod height ECP, not lower.

B. CORRECT (CCW temperature lowered by 15°F due to a CCW System malfunction.) A lowering CCW temperature causes more heat transfer in the CVCS letdown heat exchanger, which raises the affinity of the boron absorption in the mixed bed demineralizers, lowering the boron concentration in the RCS. Lower boron concentration results in criticality with rod height lower than specified in the ECP.

C. Distractor 2 (Delaying startup from 10 to 14 days after a trip from 100% equilibrium conditions) is INCORRECT, but plausible. Changes to Xenon concentration is a factor that affects accuracy of an ECP calculation. STS RE-002, DETERMINATION OF ESTIMATED CRITICAL POSITION does not require the ECP to be calculated within one hour prior to achieving criticality if the reactor has been shut down for 48 hours or more since Xenon does not change significantly after that.

D. Distractor 3 (RCS Boron concentration 50 ppm higher than that used in the ECP Calculation) is INCORRECT, but plausible. A higher boron concentration than calculated adds negative reactivity and criticality with rod height higher than specified in the ECP.