

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

1

ID: 993840

Points: 1.00

Given the following conditions:

- The Transfer/Isolation Switch for the 71K Safety Relief Valve (SRV) in the E-22 Bus Room has been placed in "Emergency".
- The red indicating light for that SRV on the HPCI Alternative Shutdown Panel is illuminated.

What does the red light for SRV 71K on the HPCI Alternative Shutdown Panel being lit indicate regarding the status of SRV 71K?

- A. The SRV control switch is in OPEN.
- B. The SRV tailpipe temperature is high.
- C. The SRV has opened on an overpressure condition.
- D. The SRV tailpipe acoustic monitor is picking up flow noises.

Answer: A

Answer Explanation		
Choice		Basis or Justification
Correct:	A	When control of the SRV is transferred to the HPCI Alternative Shutdown Panel, the light indication for the SRV only indicates the position of the switch.
Distractors :	B	Plausible as a high SRV tailpipe temperature is used to verify an SRV is open. In the control room this would bring up an alarm along with an indication from the acoustic monitor on the control rooms indicating light.
	C	Plausible as if the SRV opened on overpressure, the indicating light in the control room would also light, even though the indicating light is based off of acoustic monitoring
	D	Plausible as the control room indicating light is based off of the acoustic monitoring device.

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

Question 1 Info																																			
Question Type:	Multiple Choice																																		
Status:	Active																																		
Always select on test?	No																																		
Authorized for practice?	No																																		
Points:	1.00																																		
Time to Complete:	2																																		
Difficulty:	1.00																																		
System ID:	993840																																		
User-Defined ID:	B NRC 2019																																		
Cross Reference Number:	218000K1.05																																		
Topic:	ILT-1555-001 SE-10 Operation of SRV with switch in Emergency																																		
Num Field 1:																																			
Num Field 2:																																			
Text Field:																																			
Comments:	<table border="1"> <thead> <tr> <th colspan="4">Psychometrics</th> </tr> <tr> <th>Level of Knowledge</th> <th>Difficulty</th> <th>Time Allowance (minutes)</th> <th>RO</th> </tr> </thead> <tbody> <tr> <td>Memory</td> <td>2.75</td> <td>4</td> <td>10CRF55.41(b)(7)</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th colspan="2">Source Documentation</th> </tr> </thead> <tbody> <tr> <td>Source:</td> <td> <input type="checkbox"/> New Exam Item <input type="checkbox"/> Modified Bank Item <input checked="" type="checkbox"/> ILT Exam Bank </td> </tr> <tr> <td>Reference(s):</td> <td>SE-10 and Bases.</td> </tr> <tr> <td>Learning Objective:</td> <td>PLOT-5001G-3</td> </tr> <tr> <td>K/A System:</td> <td> <table border="1"> <tr> <td>218000 – Automatic Depressurization System</td> <td>Importance: RO / SRO</td> </tr> <tr> <td></td> <td>3.9 / 3.9</td> </tr> </table> </td> </tr> <tr> <td colspan="2">K/A Statement: K1.05 – Knowledge of the physical connections and/or cause effect relationships between AUTOMATIC DEPRESSURIZATION SYSTEM and the following: Remote shutdown system:</td> </tr> <tr> <td>REQUIRED MATERIALS:</td> <td>NONE</td> </tr> <tr> <td>Notes and Comments:</td> <td></td> </tr> </tbody> </table>			Psychometrics				Level of Knowledge	Difficulty	Time Allowance (minutes)	RO	Memory	2.75	4	10CRF55.41(b)(7)	Source Documentation		Source:	<input type="checkbox"/> New Exam Item <input type="checkbox"/> Modified Bank Item <input checked="" type="checkbox"/> ILT Exam Bank	Reference(s):	SE-10 and Bases.	Learning Objective:	PLOT-5001G-3	K/A System:	<table border="1"> <tr> <td>218000 – Automatic Depressurization System</td> <td>Importance: RO / SRO</td> </tr> <tr> <td></td> <td>3.9 / 3.9</td> </tr> </table>	218000 – Automatic Depressurization System	Importance: RO / SRO		3.9 / 3.9	K/A Statement: K1.05 – Knowledge of the physical connections and/or cause effect relationships between AUTOMATIC DEPRESSURIZATION SYSTEM and the following: Remote shutdown system:		REQUIRED MATERIALS:	NONE	Notes and Comments:	
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REQUIRED MATERIALS:	NONE																																		
Notes and Comments:																																			

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

2

ID: 2062154

Points: 1.00

Unit 2 is in MODE 1 at 35% power

- The OPRM system is in service and operable.
- APRM 3 is inoperable and bypassed.
- APRM 2 develops a critical self test fault
- OPRM 4 spuriously trips.

*Deleted per
revised key:
S. J. J.*

What is the response of the RPS system, and the reason for this response?

	response of the RPS system	reason for this response
A.	No RPS activation	one vote exists for OPRM HI-HI <u>AND</u> one vote exists for APRM HI-HI / INOP
B.	No RPS activation	one vote exists for APRM self test fault <u>AND</u> one vote exists for APRM HI-HI / INOP
C.	1/2 Scram	one vote exists for OPRM HI-HI <u>AND</u> one vote exists for APRM HI-HI / INOP
D.	1/2 Scram	one vote exists for APRM self test fault <u>AND</u> one vote exists for APRM HI-HI / INOP

Answer: A

Answer Explanation		
<<Choice		Basis or Justification
Correct:	A	APRM and OPRM are each providing one vote, however APRM and OPRM are separate voter inputs. There would be no RPS activation under these circumstances.
Distractors:	B	part 1 - correct part 2 - incorrect - APRM 3 is inop, however it is bypassed and therefore does not provide a vote. The APRM 2 self test fault brings in a vote for HI-HI / INOP. Plausible if candidate misunderstands the system
	C	part 1 - incorrect - The APRM and OPRM system do not provide half scrams. Plausible if candidate misunderstands the system part 2 - correct
	D	part 1 - incorrect - The APRM and OPRM system do not provide half scrams. Plausible if candidate misunderstands the system part 2 - incorrect - APRM 3 is inop, however it is bypassed and therefore does not provide a vote. The APRM 2 self test fault brings in a vote for HI-HI / INOP. Plausible if candidate misunderstands the system

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

Question 2 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	0
Difficulty:	0.00
System ID:	2062154
User-Defined ID:	B NRC 2019
Cross Reference Number:	215005K1.01
Topic:	ILT-5060-5a-001 OPRM relation with RPS
Num Field 1:	
Num Field 2:	
Text Field:	

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

Comments:	COPY of LORT Q# 2033788		
	Psychometrics		
	Level of Knowledge	Difficulty	Time Allowance (minutes)
	High		10CRF55.41(b)(6)
	Source Documentation		
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	Reference(s):	M-1-S-34, ARC 211 A-3	
	Learning Objective:	PLOT-5060-5	
	K/A System:	215005 - Average Power Range Monitor / Local Power Range Monitor System	Importance: RO / SRO 3.1 / 3.1
	K/A Statement:	K1.01 - Knowledge of the physical connections and/or cause effect relationships between AVERAGE POWER RANGE MONITOR/LOCAL POWER RANGE MONITOR SYSTEM and the following: RPS	
REQUIRED MATERIALS:	None		
Notes and Comments:	None		
NOTE:			

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

3

ID: 1149368

Points: 1.00

The following conditions exist during a LOOP:

- The E-1 and E-2 Emergency Diesel Generators (EDGs) failed to start
- No back-feed operations have been completed
- Unit 2 RPV level is -200 inches and lowering slowly
- A T-112 emergency blowdown is in progress

Based on these conditions, which Core Spray pump(s) will be available to line up and inject to the Unit 2 reactor vessel when the reactor is depressurized?

- A. 2C ONLY
- B. 2D ONLY
- C. 2C and 2D ONLY
- D. NONE

Answer: B

Answer Explanation		
Choice		Basis or Justification
Correct:	B	Only the "2D" pump in the "B" loop of Core Spray will be available because the "A" and "B" pumps have lost power, and the "A" loop inboard injection valve will be closed and de-energized due to loss of the E-12 bus.
Distracters:	A	Only the "2D" pump in the "B" loop of Core Spray will be available because the "A" and "B" pumps have lost power, and the "A" loop inboard injection valve will be closed and de-energized due to loss of the E-12 bus, leaving the "2C" pump without a flowpath to the reactor. Plausible as the candidate may believe the "B" loop inboard injection valve lost power vice the "A" loop.
	C	Only the "2D" pump in the "B" loop of Core Spray will be available because the "A" and "B" pumps have lost power, and the "A" loop inboard injection valve will be closed and de-energized due to loss of the E-12 bus, leaving the "2C" pump without a flowpath to the reactor. Plausible if candidate believes no injection valves lost power due to the loss of the diesels since both pumps 2C and 2D would have power.
	D	The candidate could select this if they incorrectly believe both injection paths are rendered unavailable due to power supplies.

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

Question 3 Info																																															
Question Type:	Multiple Choice																																														
Status:	Active																																														
Always select on test?	No																																														
Authorized for practice?	No																																														
Points:	1.00																																														
Time to Complete:	0																																														
Difficulty:	1.00																																														
System ID:	1149368																																														
User-Defined ID:	B NRC 2019																																														
Cross Reference Number:	209001 K2.02																																														
Topic:	ILT-5014-2b-002																																														
Num Field 1:																																															
Num Field 2:	A CERT																																														
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REQUIRED MATERIALS:		NONE																																													
Notes and Comments:																																															

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

4

ID: 2062309

Points: 1.00

Which one of the following is the power supply to the 2G WRNM detector?

- A. The 2E 24/48 VDC Distribution Panel (2AD045)
- B. The 2F 24/48 VDC Distribution Panel (2BD045)
- C. RPS MG Set BUS A
- D. RPS MG Set BUS B

Answer: A

Answer Explanation		
Correct:	A	The A, C, E, and G WRNM are powered from the 2AD045 24V panel
Distractors:	B	The B, D, F, and H WRNM are powered from the 2BD045 24V panel. This is plausible if the candidate does not know which WRNM is powered from which 24V bus.
	C	Plausible as additional Neutron Monitoring equipment is powered from the RPS MG Set Bus such as the PRNM. The WRNM would also cause a trip on RPS.
	D	Plausible as additional Neutron Monitoring equipment is powered from the RPS MG Set Bus such as the PRNM. The WRNM would also cause a trip on RPS.

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

Question 4 Info																																							
Question Type:	Multiple Choice																																						
Status:	Active																																						
Always select on test?	No																																						
Authorized for practice?	No																																						
Points:	1.00																																						
Time to Complete:	0																																						
Difficulty:	1.00																																						
System ID:	2062309																																						
User-Defined ID:	B NRC 2019																																						
Cross Reference Number:	215003K2.01																																						
Topic:	ILT-5060C-2c-003																																						
Num Field 1:																																							
Num Field 2:																																							
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Comments:	<table border="1"> <thead> <tr> <th colspan="4">Psychometrics</th> </tr> <tr> <th>Level of Knowledge</th> <th>Difficulty</th> <th>Time Allowance (minutes)</th> <th>RO</th> </tr> </thead> <tbody> <tr> <td>Memory</td> <td></td> <td></td> <td>10CRF55.41(b)(6)</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th colspan="3">Source Documentation</th> </tr> </thead> <tbody> <tr> <td>Source:</td> <td colspan="2"> <input checked="" type="checkbox"/> New Exam item <input type="checkbox"/> Modified Bank <input type="checkbox"/> ILT Exam Bank </td> </tr> <tr> <td>Reference(s):</td> <td colspan="2">E-24, M-1-S-70</td> </tr> <tr> <td>Learning Objective:</td> <td colspan="2">PLOT-5060C-2</td> </tr> <tr> <td>K/A System:</td> <td>215003 Intermediate Range Monitor (IRM) System</td> <td>Importance: RO / SRO 2.5/ 2.7</td> </tr> <tr> <td>K/A Statement:</td> <td colspan="2">K2.01 - Knowledge of electrical power supplies to the following: IRM channels/detectors</td> </tr> <tr> <td>REQUIRED MATERIALS:</td> <td colspan="2">None</td> </tr> <tr> <td>Notes and Comments:</td> <td colspan="2">None</td> </tr> </tbody> </table>			Psychometrics				Level of Knowledge	Difficulty	Time Allowance (minutes)	RO	Memory			10CRF55.41(b)(6)	Source Documentation			Source:	<input checked="" type="checkbox"/> New Exam item <input type="checkbox"/> Modified Bank <input type="checkbox"/> ILT Exam Bank		Reference(s):	E-24, M-1-S-70		Learning Objective:	PLOT-5060C-2		K/A System:	215003 Intermediate Range Monitor (IRM) System	Importance: RO / SRO 2.5/ 2.7	K/A Statement:	K2.01 - Knowledge of electrical power supplies to the following: IRM channels/detectors		REQUIRED MATERIALS:	None		Notes and Comments:	None	
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REQUIRED MATERIALS:	None																																						
Notes and Comments:	None																																						

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

5

ID: 994487

Points: 1.00

Unit 2 is at 100% power

- The 2B RPS MG Set trips

Which of the following Radiation Monitoring Systems will give a false high radiation alarm as a result of this trip?

- A. Main Steam Line Radiation Monitors
- B. Main Stack Radiation Monitors
- C. Vent Stack Radiation Monitors
- D. Control Room Ventilation Radiation Monitors

Answer: A

Answer Explanation		
Choice		Basis or Justification
Correct:	A	The B RPS MG Set provides power to the Main Steam Line Rad monitors. On a loss of power the monitors will give a false HI-HI radiation alarm.
Distractors:	B	Plausible as the Main Stack Radiation monitors alarm will also come in from a loss of power however RPS supplies no power to the main stack rad monitors
	C	Plausible as the Vent Stack Radiation monitors alarm will also come in from a loss of power however RPS supplies no power to the vent stack rad monitors
	D	Plausible as the Control Room Ventilation monitors alarm will also come in from a loss of power however RPS supplies no power to the control room vent rad monitors

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

Question 5 Info																															
Question Type:	Multiple Choice																														
Status:	Active																														
Always select on test?	No																														
Authorized for practice?	No																														
Points:	1.00																														
Time to Complete:	3																														
Difficulty:	2.00																														
System ID:	994487																														
User-Defined ID:	B NRC 2019																														
Cross Reference Number:	212000K3.01																														
Topic:	ILT-5060F-3A-001 Power supply to Rad Monitors																														
Num Field 1:																															
Num Field 2:	NA																														
Text Field:	NA																														
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REQUIRED MATERIALS:	NONE																														
Notes and Comments:																															

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

6

ID: 993558

Points: 1.00

Unit 2 is at 100% power

- A complete loss of Instrument Air occurs
- The unit scrams
- The outboard MSIVs isolate

One minute later, with no operator actions being taken:

Which of the following correctly describes the pneumatic supply to the Safety Relief Valves?

- A. ADS accumulators ONLY
- B. ADS accumulators and CAD tank
- C. ADS accumulators and Backup Instrument Nitrogen
- D. ADS accumulators, and Instrument Nitrogen system via the Instrument Nitrogen header

Answer: A

Answer Explanation		
Choice		Basis or Justification
Correct:	A	With no instrument air, the AO-2969 valves fail closed, which means no pneumatic supply to SRVs except ADS accumulators. The CAD tank supply and Backup Instrument Nitrogen have to be manually valved in.
Distractors:	B	Plausible as the CAD tank is a pneumatic supply to the SRVs, however it needs to be manually valved in.
	C	Plausible as the Backup Instrument Nitrogen is a pneumatic supply to the SRV's and the candidate may confuse the Backup Instrument Nitrogen with Instrument Air that automatically backs up Instrument Nitrogen as pressures lower. However Backup Instrument Nitrogen needs to be manually valved in.
	D	Plausible as these are the normal supplies to the SRVs, however, with no instrument air, the AO-2969 valves fail closed, which means no pneumatic supply to SRVs except ADS accumulators.

EXAMINATION ANSWER KEY

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Question 6 Info																															
Question Type:	Multiple Choice																														
Status:	Active																														
Always select on test?	No																														
Authorized for practice?	No																														
Points:	1.00																														
Time to Complete:	1																														
Difficulty:	2.00																														
System ID:	993558																														
User-Defined ID:	B NRC 2019																														
Cross Reference Number:	300000K3.01																														
Topic:	ILT-5036-3a-001 loss of IA effect on SRVs and Inst N2																														
Num Field 1:																															
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REQUIRED MATERIALS:	NONE																														
Notes and Comments:																															

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

7

ID: 993073

Points: 1.00

Unit 2 is in a GP-2 startup

- RPV pressure is at 50 psig
- Drywell pressure rises to 3.2 psig

Which one of the following valves will receive an isolation signal?

- A. RWCU Outlet Valve (MO-2-12-68).
- B. HPCI Vacuum Breaker Isolation Valve (MO-2-23-4245).
- C. Recirculation Sample Valves (AO-2-02-039 and AO-2-02-040).
- D. Main Steam Isolation Valves (AO-2-01A-80 A-D and AO-2-01A-86 A-D).

Answer: B

Answer Explanation		
Choice		Basis or Justification
Correct:	B	HPCI Vacuum Breaker Isolation Valve MO-4245 is a Group IVb isolation and occurs with Drywell Pressure > 2 psig and Steam Pressure < 75 psig
Distractors:	A	Plausible as RWCU outlet valve has many isolation signals, however none are drywell pressure of 2 psig
	C	Plausible as the Recirculation Sample Valves have many isolation valve signals, however none are listed in the stem and this system could potentially be the source of Drywell Pressure Rise.
	D	Plausible as the Main Steam Isolation valves have many isolation valve signals, however none are listed in the stem and this system could potentially be the source of Drywell Pressure Rise.

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

Question 7 Info																																							
Question Type:	Multiple Choice																																						
Status:	Active																																						
Always select on test?	No																																						
Authorized for practice?	No																																						
Points:	1.00																																						
Time to Complete:	3																																						
Difficulty:	2.00																																						
System ID:	993073																																						
User-Defined ID:	B NRC 2019																																						
Cross Reference Number:	223002 K1.04																																						
Topic:	ILT-5007G-1d-001 HPCI Isolation Signal																																						
Num Field 1:																																							
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REQUIRED MATERIALS:	None																																						
Notes and Comments:	None																																						

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

8

ID: 2086373

Points: 1.00

Which one of the following describes the Manual Bus Transfer provided for the 2AD003 Battery Charger.

The Manual Bus Transfer switch can be used to provide an alternate source of power to the ____ (1) ____ battery when ____ (2) ____ is in Mode 4 or 5

- A. (1) Division I
(2) Unit 2
- B. (1) Division I
(2) Unit 3
- C. (1) Division II
(2) Unit 2
- D. (1) Division II
(2) Unit 3

Answer: A

Answer Explanation		
Choice		Basis or Justification
Correct:	A	Battery charger 2AD003 battery charger provides power to the division I battery as shown on E-26 sheet 1. Note 10 on E-26 sheet 1 also provides the information that the MBT can only be used when Unit 2 is in Mode 4 or 5. The plant design is that when in Modes 1,2 & 3 charger power must be from that unit that requirement is relaxed in Mode 4 or 5.
Distractors :	B	Plausible if the candidate does not understand that the unit must be in mode 4 or 5 to use the feed and believes that the unit supplying the power is the unit that must be shutdown.
	C	Plausible if the candidate does not know that battery charger 2AD003 is for the Division I battery and thinks it is for Division II
	D	Plausible if the candidate does not know that battery charger 2AD003 is for the Division I battery and thinks it is for Division II Plausible if the candidate does not understand that the unit must be in mode 4 or 5 to use the feed and believes that the unit supplying the power is the unit that must be shutdown.

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

Question 8 Info																																							
Question Type:	Multiple Choice																																						
Status:	Active																																						
Always select on test?	No																																						
Authorized for practice?	No																																						
Points:	1.00																																						
Time to Complete:	0																																						
Difficulty:	0.00																																						
System ID:	2086373																																						
User-Defined ID:	B NRC 2019																																						
Cross Reference Number:	263000 K4.01																																						
Topic:	ILT-5057-3a 001. Describe the DC Distribution System design feature(s) and/or interlock(s) and																																						
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REQUIRED MATERIALS:	None																																						
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EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

9

ID: 2062670

Points: 1.00

Unit 2 is shutdown with Cooldown in progress

- 2A RHR pump is running in Shutdown Cooling in accordance with SO 10.1.B-2 "Residual Heat Removal System Shutdown Cooling Mode Manual Start"
- 2A RHR is at a flowrate of 4,000 gpm

Which one of the below listed methods should be utilized in order to reduce the cooldown rate?

- A. Cycle the 2A HPSW pump off and on.
- B. Throttle closed CV-2-10-2677A (2A RHR PUMP DISCH Valve).
- C. Close MO-2-10-89A (2A HPSW HX OUTLET Valve) ONLY
- D. Close MO-2-10-89A (2A HPSW HX OUTLET Valve) AND Open MO-2-10-89C (2C HPSW HX OUTLET Valve)

Answer: D

Answer Explanation		
		Basis or Justification
Correct:	D	Dead heading flow through the Heat Exchanger in service and establishing HPSW flow through an alternate heat exchanger is an acceptable method to maintain cool down rate IAW SO 10.1.b
Distractor s:	A	Is plausible because cycling the HPSW pump would slow the cooldown rate, however this would also cause the RHR HX ΔP to go negative and is not an acceptable method of controlling reactor temperature.
	B	Is plausible because throttling CV-2-10-2677A closed is an acceptable way to maintain reactor temperature, however CV-2-10-2677A at the current flow rate of 4,000 gpm would be at its min setting and RHR pump flow below 4,000 gpm is disallowed in SO 10.1.B-2 Precaution 3.5.
	C	Is plausible as dead heading flow through the in service Heat Exchanger is an acceptable method to maintain reactor temperature, but only if a flow path for HPSW is allowed through another Heat Exchanger. This is because there is no min flow protection for the HPSW pumps.

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

Question 9 Info																																							
Question Type:	Multiple Choice																																						
Status:	Active																																						
Always select on test?	No																																						
Authorized for practice?	No																																						
Points:	1.00																																						
Time to Complete:	3																																						
Difficulty:	2.00																																						
System ID:	2062670																																						
User-Defined ID:	B NRC 2019																																						
Cross Reference Number:	205000K5.03																																						
Topic:	ILT5010-4E-001 2019 NRC																																						
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REQUIRED MATERIALS:	None																																						
Notes and Comments:	None																																						

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

10

ID: 1149373

Points: 1.00

The E-1 Diesel Generator (DG) full load surveillance test is in progress with the following conditions:

- E-1 is in test and loaded in parallel with the 2 start-up source.
- The test is complete and the PRO is unloading the DG.
- The DG is at 150 kilowatts when a governor problem causes the DG to reverse power.
- No operator action has been taken

Based on the above conditions, which of the following describes the response of the 4 KV distribution system?

The reverse power condition will cause a trip of the _____.

- A. E-12 breaker, but the E-1 DG will continue to run
- B. E-212 breaker, but the E-1 DG will continue to run
- C. E-12 breaker and a trip/lockout of the E-1 DG
- D. E-212 breaker and a trip/lockout of the E-1 DG

Answer: A

Answer Explanation		
Choice		Basis or Justification
Correct:	A	Anti-motoring is a Generator Fault, which trips the EDG Output breaker (Relay 132 – AG12) per ARC-001 (00C226A) C-2. While some Gen Faults will trip and lockout the DG, anti-motoring does NOT, so the EDG will continue to run.
Distracters:	B	Anti-motoring affects the EDG, so the EDG output breaker trips to provide protection. Off-site feed is unaffected. Plausible if the candidate believes off-site power will divorce itself from the EDG to protect the EDG.
	C	Anti-motoring is a Generator Fault, which trips the EDG Output breaker (Relay 132 – AG12) per ARC-001 (00C226A) C-2. While some Gen Faults will trip and lockout the DG, anti-motoring does NOT, so the EDG will continue to run. Plausible if the candidate believes ALL Generator Faults will trip and lockout the DG as well as the Output Breaker.
	D	Anti-motoring affects the EDG, so the EDG output breaker trips to provide protection. Off-site feed is unaffected. Anti-motoring is a Generator Fault, which trips the EDG Output breaker (Relay 132 – AG12) per ARC-001 (00C226A) C-2. While some Gen Faults will trip and lockout the DG, anti-motoring does NOT, so the EDG will continue to run. Plausible if the candidate believes ALL Generator Faults will trip and lockout the DG as well as the Output Breaker.

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

Question 10 Info																																															
Question Type:	Multiple Choice																																														
Status:	Active																																														
Always select on test?	No																																														
Authorized for practice?	No																																														
Points:	1.00																																														
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System ID:	1149373																																														
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Cross Reference Number:	264000 K5.05																																														
Topic:	ILT 5052-4e-004 A CERT																																														
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REQUIRED MATERIALS:	NONE																																														
Notes and Comments:																																															

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

11

ID: 994085

Points: 1.00

Unit 3 is operating at 100% power when the 3A RPS Bus develops a fault.

Based on this event, what is the automatic response of Standby Gas Treatment (SGTS)?

SGTS ___(1)___ will START and the ___(2)___ Filter inlet / outlet dampers will OPEN.

- A. (1) B Fan
(2) A Train
- B. (1) C Fan
(2) B Train
- C. (1) B Fan
(2) B Train
- D. (1) C Fan
(2) A Train

Answer: D

Answer Explanation

Choice		Basis or Justification
Correct:	D	This is the correct response for a loss of the 3A RPS Bus
Distracters:	A	Plausible because the proper train is selected, however the wrong fan is stated to start
	B	Plausible because the proper fan is selected, however the wrong train is stated to align
	C	Plausible as this is the proper response to a swap of the 3B RPS

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

Question 11 Info																																															
Question Type:	Multiple Choice																																														
Status:	Active																																														
Always select on test?	No																																														
Authorized for practice?	No																																														
Points:	1.00																																														
Time to Complete:	3																																														
Difficulty:	1.00																																														
System ID:	994085																																														
User-Defined ID:	B NRC 2019																																														
Cross Reference Number:	261000K6.05																																														
Topic:	ILT-5009A-7d-003 transfer 3A RPS to alternate																																														
Num Field 1:																																															
Num Field 2:																																															
Text Field:																																															
Comments:	<table border="1"> <thead> <tr> <th colspan="4">Psychometrics</th> </tr> <tr> <th>Level of Knowledge</th> <th>Difficulty</th> <th>Time Allowance (minutes)</th> <th>RO</th> </tr> </thead> <tbody> <tr> <td>Memory</td> <td></td> <td></td> <td>10CRF55.41(b)(7)</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th colspan="4">Source Documentation</th> </tr> </thead> <tbody> <tr> <td>Source:</td> <td colspan="3"> <input type="checkbox"/> New Exam Item <input type="checkbox"/> Modified Bank Item <input checked="" type="checkbox"/> ILT Exam Bank </td> </tr> <tr> <td>Reference(s):</td> <td colspan="3">GP-8.C</td> </tr> <tr> <td>Learning Objective:</td> <td colspan="3">PLOT-5009A-7d</td> </tr> <tr> <td>K/A System:</td> <td>261000 - Standby Gas Treatment System</td> <td>Importance: 3.2</td> <td>RO / SRO 3.1 /</td> </tr> <tr> <td colspan="4">K/A Statement: K6.05 – Knowledge of the effect that a loss or malfunction of the following will have on the Standby Gas Treatment System: Reactor protection system: Plant-Specific</td> </tr> <tr> <td>REQUIRED MATERIALS:</td> <td colspan="3">NONE</td> </tr> <tr> <td>Notes and Comments:</td> <td colspan="3"></td> </tr> </tbody> </table>			Psychometrics				Level of Knowledge	Difficulty	Time Allowance (minutes)	RO	Memory			10CRF55.41(b)(7)	Source Documentation				Source:	<input type="checkbox"/> New Exam Item <input type="checkbox"/> Modified Bank Item <input checked="" type="checkbox"/> ILT Exam Bank			Reference(s):	GP-8.C			Learning Objective:	PLOT-5009A-7d			K/A System:	261000 - Standby Gas Treatment System	Importance: 3.2	RO / SRO 3.1 /	K/A Statement: K6.05 – Knowledge of the effect that a loss or malfunction of the following will have on the Standby Gas Treatment System: Reactor protection system: Plant-Specific				REQUIRED MATERIALS:	NONE			Notes and Comments:			
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Reference(s):	GP-8.C																																														
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REQUIRED MATERIALS:	NONE																																														
Notes and Comments:																																															

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

12

ID: 994248

Points: 1.00

- Unit 3 was operating at 100% power.
- Fuel Zone level transmitter LT-73C failed upscale.
- Actual reactor level subsequently lowered to -172 inches.

What would be the impact on RPV level indication and RHR initiations from RPV level?

As level lowers to -100 inches RPV level, LR-110A blue pen input would __ (1) __ **AND** at -172 inches RHR initiations __ (2) __ be impacted.

- A. (1) swap (2) would
- B. (1) swap (2) would NOT
- C. (1) NOT swap (2) would
- D. (1) NOT swap (2) would NOT

Answer: B

Answer Explanation		
Choice		Basis or Justification
Correct:	B	Blue pen input swaps from LT-72 to LT-73 when LT-72 senses -100 inches RPV level (indications would go high). ECCS -160 inches inputs continue to be taken from LT-72.
Distractors:	A	No impact to ECCS. Triple low level -160 inches inputs would continue to be taken from LT-72. Plausible if candidate misunderstands the indication swap does not affect the instruments that provide the initiation signal.
	C	Blue pen input swaps from LT-72 to LT-73 when LT-72 senses -100 inches RPV level. Plausible if candidate misunderstands how the swap at indications occurs. No impact to ECCS. Triple low level -160 inches inputs would continue to be taken from LT-72. Plausible if candidate misunderstands the indication swap does not affect the instruments that provide the initiation signal.
	D	Blue pen input swaps from LT-72 to LT-73 when LT-72 senses -100 inches RPV level. Plausible if candidate misunderstands how the swap at indications occurs.

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

Question 12 Info																															
Question Type:	Multiple Choice																														
Status:	Active																														
Always select on test?	No																														
Authorized for practice?	No																														
Points:	1.00																														
Time to Complete:	2																														
Difficulty:	2.00																														
System ID:	994248																														
User-Defined ID:	B NRC 2019																														
Cross Reference Number:	203000 K6.09																														
Topic:	A-ILT-5002B-3D-002 Unit 2 was operating at 100% power. Fuel Zone level transmitter LT-73C failed up																														
Num Field 1:																															
Num Field 2:																															
Text Field:																															
Comments:	<table border="1"> <thead> <tr> <th colspan="4">Psychometrics</th> </tr> <tr> <th>Level of Knowledge</th> <th>Difficulty</th> <th>Time Allowance (minutes)</th> <th>RO</th> </tr> </thead> <tbody> <tr> <td>Memory</td> <td></td> <td></td> <td>10CRF55.41(b)(7)</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th colspan="2">Source Documentation</th> </tr> </thead> <tbody> <tr> <td>Source:</td> <td> <div> <div>New Exam item</div> <div>Modified Bank</div> <div>X ILT Exam Bank (994248)</div> </div> <div>Previous NRC Exam</div> <div>Other Exam Bank</div> </td> </tr> <tr> <td>Reference(s):</td> <td>PLOT-5002B</td> </tr> <tr> <td>Learning Objective:</td> <td>PLOT-5002B-3d</td> </tr> <tr> <td>K/A System:</td> <td> <div>203000 - RHR/LPCI Injection Mode (Plant Specific)</div> <div>Importance: RO / SRO 3.4/ 3.4</div> </td> </tr> <tr> <td>K/A Statement:</td> <td>K6.09 - Knowledge of the effect that a loss or malfunction of the following will have on the RHR/LPCI: INJECTION MODE (PLANT SPECIFIC) : Nuclear boiler instrumentation</td> </tr> <tr> <td>REQUIRED MATERIALS:</td> <td>None</td> </tr> <tr> <td>Notes and Comments:</td> <td>None</td> </tr> </tbody> </table>			Psychometrics				Level of Knowledge	Difficulty	Time Allowance (minutes)	RO	Memory			10CRF55.41(b)(7)	Source Documentation		Source:	<div> <div>New Exam item</div> <div>Modified Bank</div> <div>X ILT Exam Bank (994248)</div> </div> <div>Previous NRC Exam</div> <div>Other Exam Bank</div>	Reference(s):	PLOT-5002B	Learning Objective:	PLOT-5002B-3d	K/A System:	<div>203000 - RHR/LPCI Injection Mode (Plant Specific)</div> <div>Importance: RO / SRO 3.4/ 3.4</div>	K/A Statement:	K6.09 - Knowledge of the effect that a loss or malfunction of the following will have on the RHR/LPCI: INJECTION MODE (PLANT SPECIFIC) : Nuclear boiler instrumentation	REQUIRED MATERIALS:	None	Notes and Comments:	None
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Level of Knowledge	Difficulty	Time Allowance (minutes)	RO																												
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Reference(s):	PLOT-5002B																														
Learning Objective:	PLOT-5002B-3d																														
K/A System:	<div>203000 - RHR/LPCI Injection Mode (Plant Specific)</div> <div>Importance: RO / SRO 3.4/ 3.4</div>																														
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REQUIRED MATERIALS:	None																														
Notes and Comments:	None																														

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

13

ID: 1588479

Points: 1.00

Unit 2 is operating at 100% power when the Reactor Water Cleanup system inadvertently isolates.

Which one of the following describes:

(1) the effect on Reactor Building Closed Cooling Water (RBCCW) temperature

AND

(2) the automatic system response OR operator action needed to return temperature to the pre-transient value

- A. (1) remain at approximately the pre-transient value
(2) Service Water flow through the heat exchanger is automatically adjusted
- B. (1) remain at approximately the pre-transient value
(2) RBCCW flow through the heat exchanger is automatically adjusted
- C. (1) lower
(2) RBCCW temperature is raised by manually adjusting Service Water flow through the heat exchangers
- D. (1) lower
(2) RBCCW temperature is raised by manually adjusting RBCCW flow through the heat exchangers

Answer: C

Answer Explanation		
Choice		Basis or Justification
Correct:	C	RBCCW temperature control is adjusted manually. With lower heat load due to isolation of RWCU, RBCCW temperature lowers. RBCCW temperature is raised by adjusting Service Water flow through the heat exchanger (throttled), not RBCCW flow (valves full open).
Distracters:	A	RBCCW temperature control is adjusted manually. Plausible because other plant systems such as ASD and Stator Water Cooling for example have automatic temperature control.
	B	RBCCW temperature control is adjusted manually. Plausible because other plant systems such as ASD and Stator Water Cooling for example have automatic temperature control.
	D	RBCCW temperature is raised by adjusting Service Water flow through the heat exchanger (throttled), not RBCCW flow (valves full open). Plausible because throttling RBCCW flow would also work, but is not in accordance with procedure.

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

Question 13 Info																															
Question Type:	Multiple Choice																														
Status:	Active																														
Always select on test?	No																														
Authorized for practice?	No																														
Points:	1.00																														
Time to Complete:	3																														
Difficulty:	3.00																														
System ID:	1588479																														
User-Defined ID:	B NRC 2019																														
Cross Reference Number:	400000 A1.02																														
Topic:	Temperature control on loss of RWCU																														
Num Field 1:																															
Num Field 2:																															
Text Field:																															
Comments:	<table border="1"> <thead> <tr> <th colspan="4">Psychometrics</th> </tr> <tr> <th>Level of Knowledge</th> <th>Difficulty</th> <th>Time Allowance (minutes)</th> <th>RO</th> </tr> </thead> <tbody> <tr> <td>HIGH</td> <td></td> <td></td> <td>10CFR55.41(b) (4)</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th colspan="2">Source Documentation</th> </tr> </thead> <tbody> <tr> <td>Source:</td> <td> <div> <input checked="" type="checkbox"/> New Exam item <div>Previous NRC</div> </div> <div> <input type="checkbox"/> Exam <div>Other Exam</div> </div> <div> <input type="checkbox"/> Modified Bank <div></div> </div> <div> <input type="checkbox"/> Bank <div></div> </div> <div> <input type="checkbox"/> ILT Exam Bank <div></div> </div> </td> </tr> <tr> <td>Reference(s):</td> <td>M-316, SO 35.1.A-2</td> </tr> <tr> <td>Learning Objective:</td> <td>PLOT-5035 5a</td> </tr> <tr> <td>K/A System:</td> <td> <div>400000 Component Cooling Water</div> <div>Importance; RO</div> <div>2.8</div> </td> </tr> <tr> <td>K/A Statement:</td> <td>A1.02 - Ability to predict and / or monitor changes in parameters associated with operating the CCWS controls including: CCW temperature</td> </tr> <tr> <td>REQUIRED MATERIALS:</td> <td>NONE</td> </tr> <tr> <td>Notes and Comments:</td> <td>none</td> </tr> </tbody> </table>			Psychometrics				Level of Knowledge	Difficulty	Time Allowance (minutes)	RO	HIGH			10CFR55.41(b) (4)	Source Documentation		Source:	<div> <input checked="" type="checkbox"/> New Exam item <div>Previous NRC</div> </div> <div> <input type="checkbox"/> Exam <div>Other Exam</div> </div> <div> <input type="checkbox"/> Modified Bank <div></div> </div> <div> <input type="checkbox"/> Bank <div></div> </div> <div> <input type="checkbox"/> ILT Exam Bank <div></div> </div>	Reference(s):	M-316, SO 35.1.A-2	Learning Objective:	PLOT-5035 5a	K/A System:	<div>400000 Component Cooling Water</div> <div>Importance; RO</div> <div>2.8</div>	K/A Statement:	A1.02 - Ability to predict and / or monitor changes in parameters associated with operating the CCWS controls including: CCW temperature	REQUIRED MATERIALS:	NONE	Notes and Comments:	none
Psychometrics																															
Level of Knowledge	Difficulty	Time Allowance (minutes)	RO																												
HIGH			10CFR55.41(b) (4)																												
Source Documentation																															
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K/A Statement:	A1.02 - Ability to predict and / or monitor changes in parameters associated with operating the CCWS controls including: CCW temperature																														
REQUIRED MATERIALS:	NONE																														
Notes and Comments:	none																														

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

14

ID: 2084391

Points: 1.00

The E-1 Diesel Generator is supplying the E-12 Bus. The PRO has been directed to parallel the E-12 bus with the #2 S/U Emergency Bus.

Incoming Voltage - 4.4 Kv
Running Voltage - 4.4 Kv

Given the above indication of Incoming and Running voltages the PRO must ____ (1) ____ Running voltage using the ____ (2) ____ control switch.

- A. (1) lower
(2) 2 S/U Load Tap Changer
- B. (1) lower
(2) Auto Volt Reg
- C. (1) raise
(2) 2 S/U Load Tap Changer
- D. (1) raise
(2) Auto Volt Reg

Answer: D

Answer Explanation		
Choice		Basis or Justification
Correct:	D	SO 52A.1.B provides the guidance to raise Diesel Generator running voltage 50 to 100 volts
Distractors :	A	Plausible if the candidate believes that incoming voltage should be higher than running. This is true when transferring load to the D/G from the Startup Emergency bus. Plausible because the 2SU Load Tap Changer would change the running voltage if in a different configuration.
	B	Plausible if the candidate believes that incoming voltage should be higher than running. This is true when transferring load to the D/G from the Startup Emergency bus.
	C	Plausible because the 2SU Load Tap Changer would change the running voltage if in a different configuration.

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

Question 14 Info																																															
Question Type:	Multiple Choice																																														
Status:	Active																																														
Always select on test?	No																																														
Authorized for practice?	No																																														
Points:	1.00																																														
Time to Complete:	0																																														
Difficulty:	1.00																																														
System ID:	2084391																																														
User-Defined ID:	B NRC 2019																																														
Cross Reference Number:	262001A103																																														
Topic:	ILT - 5054 11- 001 . Given a set of conditions evaluate plant performance and make operational																																														
Num Field 1:																																															
Num Field 2:																																															
Text Field:																																															
Comments:	<table border="1"> <thead> <tr> <th colspan="4">Psychometrics</th> </tr> <tr> <th>Level of Knowledge</th> <th>Difficulty</th> <th>Time Allowance (minutes)</th> <th>RO</th> </tr> </thead> <tbody> <tr> <td>High</td> <td></td> <td></td> <td>10CRF55.41(b) 7</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th colspan="4">Source Documentation</th> </tr> </thead> <tbody> <tr> <td>Source:</td> <td colspan="3"> <input checked="" type="checkbox"/> New Exam item <input type="checkbox"/> Previous NRC Exam <input type="checkbox"/> Modified Bank <input type="checkbox"/> Exam Bank <input type="checkbox"/> ILT Exam Bank <div style="text-align: right;">Other</div> </td> </tr> <tr> <td>Reference(s):</td> <td colspan="3">SO 52A.1.B</td> </tr> <tr> <td>Learning Objective:</td> <td colspan="3">PLOT - 5054 11</td> </tr> <tr> <td>K/A System:</td> <td>262001 - AC Electrical Distribution</td> <td>Importance; / SRO</td> <td>RO 2.9</td> </tr> <tr> <td>K/A Statement:</td> <td colspan="3">A103 - Ability to predict and/or monitor changes in parameters associated with operating the AC Electrical Distribution controls including: Bus voltage</td> </tr> <tr> <td>REQUIRED MATERIALS:</td> <td colspan="3">None</td> </tr> <tr> <td>Notes and Comments:</td> <td colspan="3">None</td> </tr> </tbody> </table>			Psychometrics				Level of Knowledge	Difficulty	Time Allowance (minutes)	RO	High			10CRF55.41(b) 7	Source Documentation				Source:	<input checked="" type="checkbox"/> New Exam item <input type="checkbox"/> Previous NRC Exam <input type="checkbox"/> Modified Bank <input type="checkbox"/> Exam Bank <input type="checkbox"/> ILT Exam Bank <div style="text-align: right;">Other</div>			Reference(s):	SO 52A.1.B			Learning Objective:	PLOT - 5054 11			K/A System:	262001 - AC Electrical Distribution	Importance; / SRO	RO 2.9	K/A Statement:	A103 - Ability to predict and/or monitor changes in parameters associated with operating the AC Electrical Distribution controls including: Bus voltage			REQUIRED MATERIALS:	None			Notes and Comments:	None		
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Reference(s):	SO 52A.1.B																																														
Learning Objective:	PLOT - 5054 11																																														
K/A System:	262001 - AC Electrical Distribution	Importance; / SRO	RO 2.9																																												
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REQUIRED MATERIALS:	None																																														
Notes and Comments:	None																																														

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

15

ID: 2085328

Points: 1.00

Unit 2 has scrammed, the following conditions exist:

- The "C" RFP Discharge Bypass Valve (AO-8091) is controlling RPV level at +23 inches in automatic control.
- The air supply to AO-8091 is lost.

One minute later:

As a result of this condition, the Digital Feedwater Control signal to AO-8091 will (1) and the operator will enter and execute (2)

- A. (1) rise (to open the valve)
(2) ON-119 "Loss of Instrument Air"
- B. (1) rise (to open the valve)
(2) OT-100 "Low Reactor Water Level"
- C. (1) lower (to close the valve)
(2) ON-119 "Loss of Instrument Air"
- D. (1) lower (to close the valve)
(2) OT-110 "Reactor High Level"

Answer: D

Answer Explanation		
Choice		Basis or Justification
Correct:	D	Loss of instrument Air to AO-8091 causes the control valve to fail open. This would cause RPV level to rise. Entering OT-110 would be proper for these conditions.
Distractors:	A	Plausible if the candidate believes that AO-8091 fails closed. Plausible if the candidate believes since the malfunction is caused by a loss of instrument air, ON-119 should be entered. There are no ON-119 entry conditions present.
	B	Plausible if the candidate believes that AO-8091 fails closed. OT-100 is plausible because if the AO-8091 fails closed the level would be lowering.
	C	Plausible if the candidate believes since the malfunction is caused by a loss of instrument air, ON-119 should be entered. There are no ON-119 entry conditions present.

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

Question 15 Info																																															
Question Type:	Multiple Choice																																														
Status:	Active																																														
Always select on test?	No																																														
Authorized for practice?	No																																														
Points:	1.00																																														
Time to Complete:	0																																														
Difficulty:	1.00																																														
System ID:	2085328																																														
User-Defined ID:	B NRC 2019																																														
Cross Reference Number:	259002A2.05																																														
Topic:	ILT - 5006 10e-001 Given a set of conditions (a) predict the impacts of the following on the Feed																																														
Num Field 1:																																															
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REQUIRED MATERIALS:	Nohe																																														
Notes and Comments:	None																																														

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

16

ID: 994780

Points: 1.00

An ATWS has occurred on Unit 2

The Unit Reactor Operator initiated the 'B' Standby Liquid Control (SBLC) System using RRC 11.1-2 "SBLC System Initiation During a Plant Event".

The following conditions exist:

- RPV pressure is 1020 psig
- SBLC discharge pressure is 1400 psig

Which statement below correctly states the status of SBLC and the required action, if any?

- A. SBLC is injecting at full flow
- B. SBLC is injecting at reduced flow; initiate System 'A' from the Control Room
- C. SBLC is NOT injecting; initiate System 'A' from the Control Room
- D. SBLC is NOT injecting; direct an Equipment Operator to locally start the 'A' SBLC pump

Answer: C

Answer Explanation		
Correct:	C	Based on the given conditions (1400 psig pump discharge pressure), SBLC is not injecting as the squib injection valves have failed to fire. Per RRC 11.1-2 and the supporting system operating procedure (SO 11.1.B-2), the operator is directed to verify SBLC is injecting and, if not, to start the other SBLC pump.
Distractors:	A	SBLC is not injecting. Plausible if applicant does not recognize 1400 psig pump discharge pressure as abnormal.
	B	SBLC is not injecting. Plausible if applicant recognizes 1400 psig pump discharge pressure as abnormal, but does not understand SBLC system design and believes the system is injecting at reduced flow.
	D	SBLC is not injecting but the 'A' SBLC system should be started to comply with the procedure. Plausible if applicant misunderstands that a local start will start the 'A' SBLC pump, but will not fire the squib valves that have failed to fire given the conditions.

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

Question 16 Info																																							
Question Type:	Multiple Choice																																						
Status:	Active																																						
Always select on test?	No																																						
Authorized for practice?	No																																						
Points:	1.00																																						
Time to Complete:	3																																						
Difficulty:	2.00																																						
System ID:	994780																																						
User-Defined ID:	B NRC 2019																																						
Cross Reference Number:	211000 A2.04																																						
Topic:	ILT-5011-9J-001 During an ATWS condition, the URO initiated the "B" Standby Liquid Control (SBLC)																																						
Num Field 1:																																							
Num Field 2:																																							
Text Field:																																							
Comments:	<table border="1"> <thead> <tr> <th colspan="4">Psychometrics</th> </tr> <tr> <th>Level of Knowledge</th> <th>Difficulty</th> <th>Time Allowance (minutes)</th> <th>RO</th> </tr> </thead> <tbody> <tr> <td>HIGH</td> <td></td> <td></td> <td>10CRF55.41(b) (7)</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th colspan="3">Source Documentation</th> </tr> </thead> <tbody> <tr> <td>Source:</td> <td colspan="2"> <div> <input type="checkbox"/> New Exam item <div>Previous NRC Exam</div> <input type="checkbox"/> Modified Bank <div>Other Exam Bank</div> <input checked="" type="checkbox"/> ILT Exam Bank (994780) </div> </td> </tr> <tr> <td>Reference(s):</td> <td colspan="2">RRC 11.1-2; SO 11.1.B-2</td> </tr> <tr> <td>Learning Objective:</td> <td colspan="2">PLOT-5011-10d</td> </tr> <tr> <td>K/A System:</td> <td>211000 Standby Liquid Control System</td> <td> Importance; RO / SRO 3.1/ 3.4 </td> </tr> <tr> <td>K/A Statement:</td> <td colspan="2"> A2.04 - Ability to (a) predict the impacts of the following on the STANDBY LIQUID CONTROL SYSTEM ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Inadequate system flow </td> </tr> <tr> <td>REQUIRED MATERIALS:</td> <td colspan="2">None</td> </tr> <tr> <td>Notes and Comments:</td> <td colspan="2">None</td> </tr> </tbody> </table>			Psychometrics				Level of Knowledge	Difficulty	Time Allowance (minutes)	RO	HIGH			10CRF55.41(b) (7)	Source Documentation			Source:	<div> <input type="checkbox"/> New Exam item <div>Previous NRC Exam</div> <input type="checkbox"/> Modified Bank <div>Other Exam Bank</div> <input checked="" type="checkbox"/> ILT Exam Bank (994780) </div>		Reference(s):	RRC 11.1-2; SO 11.1.B-2		Learning Objective:	PLOT-5011-10d		K/A System:	211000 Standby Liquid Control System	Importance; RO / SRO 3.1/ 3.4	K/A Statement:	A2.04 - Ability to (a) predict the impacts of the following on the STANDBY LIQUID CONTROL SYSTEM ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Inadequate system flow		REQUIRED MATERIALS:	None		Notes and Comments:	None	
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REQUIRED MATERIALS:	None																																						
Notes and Comments:	None																																						

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

17

ID: 2062762

Points: 1.00

Unit 2 HPCI is in service with the following lineup...

Pump Discharge MO-2-23-020:	Red light
Full Flow Test MO-2-23-021:	Red light
Cond Tank Return MO 2-23-024:	Red light
To Feed Line MO-2-23-019:	Red light
Check AO-2-23-018:	Green light

Subsequently:

- REACTOR WATER LEVEL LOW LOW (ARC 221 E-5) is received

30 seconds later, without operator action;

What are the indicated positions of AO-2-23-018 (CHECK) and MO-2-23-024 (COND TANK RETURN)?

AO-2-23-018 (CHECK) indicates ____ (1) ____

and

MO-2-23-024 (COND TANK RETURN) indicates ____ (2) ____

- A. 1) OPEN
2) OPEN
- B. 1) OPEN
2) CLOSED
- C. 1) CLOSED
2) OPEN
- D. 1) CLOSED
2) CLOSED

Answer: B

Answer Explanation		
Choice		Basis or Justification
Correct:	B	HPCI is lined up for CST-CST Mode from injection mode out of the RRC 23.1-2 Section C. Reactor Water Level Low Low alarm is indicative of -48 inches in the reactor vessel. This is an initiation signal for HPCI. IAW SO 23.7.A upon receipt of -48 inches, HPCI will lineup automatically for injection. This involves automatically closing the Condensate return valve MO-2-23-024. The check valve AO-2-23-018 will also indicate open as HPCI begins to inject into the vessel.
Distractor s:	A	Plausible as Split flow mode is a configuration that is used during HPCI operations, however with an initiation signal present, MO-2-23-024 would go closed
	C	Plausible as this is the lineup currently shown for HPCI. The candidate might not recognize the alarm as an initiation signal, or misunderstand the automatic actions that occur for an automatic initiation.
	D	Plausible if candidate misinterprets alarm as an isolation signal and not an initiation signal.

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

Question 17 Info																																							
Question Type:	Multiple Choice																																						
Status:	Active																																						
Always select on test?	No																																						
Authorized for practice?	No																																						
Points:	1.00																																						
Time to Complete:	3																																						
Difficulty:	2.00																																						
System ID:	2062762																																						
User-Defined ID:	B NRC 2019																																						
Cross Reference Number:	206000 A3.07																																						
Topic:	ILT 5023-9k8-002 2019 NRC																																						
Num Field 1:																																							
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REQUIRED MATERIALS:	None																																						
Notes and Comments:																																							

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

18

ID: 2078178

Points: 1.00

An "Emergency Blowdown" per T-112 is in progress on Unit 2, with 5 Safety Relief Valve control switches in OPEN. The following conditions exist:

- Torus pressure: 20 psig
- Drywell pressure: 22 psig
- Reactor pressure: 135 psig and lowering

Considering the above conditions which one of the following describes the control room position indication and actual SRV position?

	Indicating position	Actual position
A.	OPEN	OPEN
B.	OPEN	CLOSED
C.	CLOSED	OPEN
D.	CLOSED	CLOSED

Answer: C

Answer Explanation		
Choice	Basis or Justification	
Correct:	C	IAW T-112 bases the SRV's would remain open if the switches are in "OPEN" and RPV to Torus differential pressure is > 50 psid. $135 - 20 = 115$ psid. The SRV's would be open. However the acoustic position below 150 psid would indicate closed.
Distractors:	A	Plausible if candidate misunderstands that control room indication comes from acoustic monitoring and not control switches such as using SRV's at the alternative shutdown panel
	B	Plausible if candidate misunderstands that control room indication comes from acoustic monitoring and not control switches such as using SRV's at the alternative shutdown panel. Also if candidate misapplies the differential pressure they may consider that the SRV is closed
	D	Plausible if candidate misapplies the differential pressure they may consider that the SRV indicates closed, and therefore is closed.

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

Question 18 Info																																															
Question Type:	Multiple Choice																																														
Status:	Active																																														
Always select on test?	No																																														
Authorized for practice?	No																																														
Points:	1.00																																														
Time to Complete:	3																																														
Difficulty:	2.00																																														
System ID:	2078178																																														
User-Defined ID:	B NRC 2019																																														
Cross Reference Number:	239002 A3.04																																														
Topic:	ILT-PBIG-2112-5a-004 2019 NRC																																														
Num Field 1:																																															
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Psychometrics																																															
Level of Knowledge	Difficulty	Time Allowance (minutes)	RO																																												
HIGH			10CRF55.41(b)(7)																																												
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Reference(s):	T-112 Bases																																														
Learning Objective:	ILT-PBIG-2112-5a																																														
K/A System:	239002 - Relief/Safety Valves	Importance; SRO	RO / 3.6/ 3.7																																												
K/A Statement:	A3.04 - Ability to monitor automatic operations of the RELIEF/SAFETY VALVES including: Acoustical monitor noise																																														
REQUIRED MATERIALS:	None																																														
Notes and Comments:	None																																														

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

19

ID: 1600733

Points: 1.00

Unit 2 is operating at 100% power with the following:

- A momentary loss of output from the Static Inverter to Panel 20Y050 causes the static switch to bypass the inverter.
- Annunciator 220 F-5, INVERTER TROUBLE, alarms.

Then, normal power output from the Static Inverter is restored.

Which one of the following describes describes the effect of this transient on Panel 20Y050

AND

the "C" Feedwater heater string?

Panel 20Y050...

- A. must be manually transferred back to the Static Inverter.
The "C" Feedwater heater string will automatically return to service.
- B. must be manually transferred back to the Static Inverter.
The "C" Feedwater heater string must be manually returned to service.
- C. automatically transfers back to the Static Inverter.
The "C" Feedwater heater string will automatically return to service.
- D. automatically transfers back to the Static Inverter.
The "C" Feedwater heater string must be manually returned to service.

Answer: C

Answer Explanation

*Deleted per
revised key-
J. Ash*

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

Choice		Basis or Justification
Correct:	C	The static switch is normal seeking. It will automatically transfer power back to the Static Inverter 30 seconds after the Static Inverter output is restored. An 11 seconds time delay is installed on the stop and drain valves which prevents an isolation during a fast transfer. The feedwater heaters will be returned to service without any operator actions.
Distracters:	A	The static switch is normal seeking. It will automatically transfer power back to the Static Inverter 30 seconds after the Static Inverter output is restored. Plausible that the design of the static switch would require manual action to return to the initially degraded power source to prevent damage.
	B	The static switch is normal seeking. It will automatically transfer power back to the Static Inverter 30 seconds after the Static Inverter output is restored. Plausible that the design of the static switch would require manual action to return to the initially degraded power source to prevent damage. No actions are required to restore the heater string. Plausible if the candidate does not recall the purpose of the 11 second time delay.
	D	The Control Room alarm will automatically reset when the transfer occurs. Plausible because this requires local alarm reset on some plants. No actions are required to restore the heater string. Plausible if the candidate does not recall the purpose of the 11 second time delay.

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

Question 19 Info																															
Question Type:	Multiple Choice																														
Status:	Active																														
Always select on test?	No																														
Authorized for practice?	No																														
Points:	1.00																														
Time to Complete:	0																														
Difficulty:	0.00																														
System ID:	1600733																														
User-Defined ID:	B NRC 2019																														
Cross Reference Number:	262002 A4.01																														
Topic:	Return to normal power																														
Num Field 1:																															
Num Field 2:	A NRC																														
Text Field:																															
Comments:	<table border="1"> <thead> <tr> <th colspan="4">Psychometrics</th> </tr> <tr> <th>Level of Knowledge</th> <th>Difficulty</th> <th>Time Allowance (minutes)</th> <th>RO</th> </tr> </thead> <tbody> <tr> <td>MEMORY</td> <td></td> <td></td> <td>10CFR55.41(b) (7)</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th colspan="2">Source Documentation</th> </tr> </thead> <tbody> <tr> <td>Source:</td> <td> <div> <div>New Exam item</div> <div><input checked="" type="checkbox"/> Previous NRC Exam</div> </div> <div>(2017 NRC exam)</div> <div>Modified Bank</div> <div>Other Exam</div> <div>Bank</div> <div>ILT Exam Bank</div> </td> </tr> <tr> <td>Reference(s):</td> <td>ARC-220 F-5, SO 58B.7.B-2 P-S-45</td> </tr> <tr> <td>Learning Objective:</td> <td>PLOT-5058 7c</td> </tr> <tr> <td>K/A System:</td> <td> <div>262002 - UPS (AC/DC)</div> <div>Importance; RO</div> <div>2.8</div> </td> </tr> <tr> <td>K/A Statement:</td> <td>A4.01 - Ability to manually operate and/or monitor in the control room: Transfer from alternative source to preferred source</td> </tr> <tr> <td>REQUIRED MATERIALS:</td> <td>NONE</td> </tr> <tr> <td>Notes and Comments:</td> <td></td> </tr> </tbody> </table>			Psychometrics				Level of Knowledge	Difficulty	Time Allowance (minutes)	RO	MEMORY			10CFR55.41(b) (7)	Source Documentation		Source:	<div> <div>New Exam item</div> <div><input checked="" type="checkbox"/> Previous NRC Exam</div> </div> <div>(2017 NRC exam)</div> <div>Modified Bank</div> <div>Other Exam</div> <div>Bank</div> <div>ILT Exam Bank</div>	Reference(s):	ARC-220 F-5, SO 58B.7.B-2 P-S-45	Learning Objective:	PLOT-5058 7c	K/A System:	<div>262002 - UPS (AC/DC)</div> <div>Importance; RO</div> <div>2.8</div>	K/A Statement:	A4.01 - Ability to manually operate and/or monitor in the control room: Transfer from alternative source to preferred source	REQUIRED MATERIALS:	NONE	Notes and Comments:	
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REQUIRED MATERIALS:	NONE																														
Notes and Comments:																															

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

20

ID: 2078414

Points: 1.00

Unit 2 has been shutdown due to a transient

RCIC is in CST-CST for pressure control in accordance with RRC 13.1-1 "RCIC System Operation During a Plant Event". System status is as follows:

- Flow: 600 gpm
- Discharge pressure: 900 psig
- Turbine speed: 2100 rpm

Which of the following would be used to raise RCIC turbine speed to 3000 rpm, while remaining in CST-CST?

- A. Adjust RCIC Flow controller in the clockwise direction
- B. Adjust RCIC Flow controller in the counter-clockwise direction
- C. Throttle Close MO-2-13-030 "Full Flow Test"
- D. Throttle Open MO-2-13-030 "Full Flow Test"

Answer: C

Answer Explanation		
Choice		Basis or Justification
Correct:	C	Throttling close MO-30 while in CST-CST will cause the RCIC Turbine to raise pressure to push 600 gpm through that valve. Therefore the RCIC Turbine will work harder and raise RCIC Turbine speed.
Distracters:	A	Plausible because turning the flow controller in the clockwise direction will raise RCIC flow rate and will cause the RCIC Turbine to work harder and raise RCIC Turbine speed, however 600 gpm is the max flow that RCIC is allowed.
	B	Plausible because raising RCIC flow rate and will cause the RCIC Turbine to work harder and raise RCIC Turbine speed. However turning the flow control in the counter-clockwise direction will lower speed. Plausible if candidate misunderstands RCIC flow controller.
	D	Plausible if candidate misapplies pump laws and believes that opening the valve will cause the pump to work harder to move more flow.

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

Question 20 Info																																	
Question Type:	Multiple Choice																																
Status:	Active																																
Always select on test?	No																																
Authorized for practice?	No																																
Points:	1.00																																
Time to Complete:	3																																
Difficulty:	2.00																																
System ID:	2078414																																
User-Defined ID:	B NRC 2019																																
Cross Reference Number:	217000 A4.01																																
Topic:	ILT-5013-9k5-001 2019 NRC																																
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REQUIRED MATERIALS:	NONE																																
Notes and Comments:																																	

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

21

ID: 993829

Points: 1.00

A total loss of off-site power has occurred. The crew is performing SE-11 "Loss of Off-Site Power" with the following conditions:

- Attachment A, "Diesel Generator Lockout from the Main Control Room" has been performed on the E1 and E3 Diesel Generators.
- "E2 Diesel Gen Differential and Ground" (002 G1) alarm is in.
- E4 Diesel Generator will NOT start.
- E-32 and E-33 breakers are inoperable and CANNOT be closed.

According to SE-11 "Loss of Off-Site Power", how many Diesel Generators are available for determination of the diesel strategy?

- A. 0
- B. 1
- C. 2
- D. 3

Answer: B

Answer Explanation		
Choice		Basis or Justification
Correct:	B	Using step LP-7 of SE-11 sheet 1, we find that E1 is the only available diesel. E-2 has differential current and is unavailable. E-4 will not start and E-3 cannot supply power to either of its busses.
Distracters:	A	Plausible if candidate does not understand that E-1 has been locked out due to no cooling water. This diesel can still be considered operable IAW step LP-7 of SE-11
	C	Plausible if candidate believes E-3 Diesel is also available along with E-1 because it was shutdown for lack of cooling. However E-3 cannot supply power to any 4kv busses because E-32 and E-33 breakers are inoperable.
	D	Plausible if candidate believes E-1 and E-3 are available for the above reasons and does not understand that receiving the "E2 Diesel Gen Differential and Ground" causes the diesel to trip and lockout therefore making the E-2 unavailable.

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

Question 21 Info																																							
Question Type:	Multiple Choice																																						
Status:	Active																																						
Always select on test?	No																																						
Authorized for practice?	No																																						
Points:	1.00																																						
Time to Complete:	4																																						
Difficulty:	2.00																																						
System ID:	993829																																						
User-Defined ID:	B NRC 2019																																						
Cross Reference Number:	262001 G2.1.20																																						
Topic:	ILT-1555-002 SE-11 How many EDG available																																						
Num Field 1:	3472																																						
Num Field 2:	N/A																																						
Text Field:	A																																						
Comments:	<table border="1"> <thead> <tr> <th colspan="4">Psychometrics</th> </tr> <tr> <th>Level of Knowledge</th> <th>Difficulty</th> <th>Time Allowance (minutes)</th> <th>RO</th> </tr> </thead> <tbody> <tr> <td>HIGH</td> <td></td> <td></td> <td>10CFR55.41(b) (10)</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th colspan="3">Source Documentation</th> </tr> </thead> <tbody> <tr> <td>Source:</td> <td> <div> <div>New Exam item</div> <div>NRC Exam</div> <div>Modified Bank</div> <div>Bank</div> <div>X ILT Exam Bank (993829)</div> </div> </td> <td> <div>Previous</div> <div>Other Exam</div> </td> </tr> <tr> <td>Reference(s):</td> <td colspan="2">SE-11 Sheet 1</td> </tr> <tr> <td>Learning Objective:</td> <td colspan="2">PLOT-1555-12</td> </tr> <tr> <td>K/A System:</td> <td>262001 - A.C. Electrical Distribution</td> <td> <div>Importance;</div> <div>RO /</div> <div>SRO</div> <div>4.6 / 4.6</div> </td> </tr> <tr> <td>K/A Statement:</td> <td colspan="2">G 2.1.20 - Ability to interpret and execute procedure steps</td> </tr> <tr> <td>REQUIRED MATERIALS:</td> <td colspan="2">NONE</td> </tr> <tr> <td>Notes and Comments:</td> <td colspan="2"></td> </tr> </tbody> </table>			Psychometrics				Level of Knowledge	Difficulty	Time Allowance (minutes)	RO	HIGH			10CFR55.41(b) (10)	Source Documentation			Source:	<div> <div>New Exam item</div> <div>NRC Exam</div> <div>Modified Bank</div> <div>Bank</div> <div>X ILT Exam Bank (993829)</div> </div>	<div>Previous</div> <div>Other Exam</div>	Reference(s):	SE-11 Sheet 1		Learning Objective:	PLOT-1555-12		K/A System:	262001 - A.C. Electrical Distribution	<div>Importance;</div> <div>RO /</div> <div>SRO</div> <div>4.6 / 4.6</div>	K/A Statement:	G 2.1.20 - Ability to interpret and execute procedure steps		REQUIRED MATERIALS:	NONE		Notes and Comments:		
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K/A System:	262001 - A.C. Electrical Distribution	<div>Importance;</div> <div>RO /</div> <div>SRO</div> <div>4.6 / 4.6</div>																																					
K/A Statement:	G 2.1.20 - Ability to interpret and execute procedure steps																																						
REQUIRED MATERIALS:	NONE																																						
Notes and Comments:																																							

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

22

ID: 2086415

Points: 1.00

Digital Feedwater Control System uses an input from ____ (1) ____ to determine the Control Mode (Low or High) **AND** the High Power mode uses inputs from ____ (2) ____ to control RPV level.

- A. (1) feed flow
(2) RPV level only
- B. (1) feed flow
(2) steam flow/feed flow and RPV level
- C. (1) steam flow
(2) RPV level only
- D. (1) steam flow
(2) steam flow/feed flow and RPV level

Answer: B

Answer Explanation		
Choice		Basis or Justification
Correct:	B	IAW SO 6C.1.D-3 in a note at step 4.8, the Digital Feedwater system will automatically select High or Low power mode. Low Power if < 20% total <u>Feedwater Flow</u> and High Power if > 20% total Feedwater Flow. The High Power mode uses inputs from steam flow and feed flow along with RPV level to better anticipate changes in level and minimize the level transients
Distractors:	A	Plausible if the candidate does not understand the High Power mode uses multiple inputs also that low power mode does only use RPV level input to control RPV because at low power the signals from steam flow and feed flow are not accurate enough to provide reliable inputs.
	C	Plausible if the candidate believes that the input for control is steam flow. Steam flow is used in other systems like the RWM for turn on/off points. Plausible if the candidate does not understand the High Power mode uses multiple inputs also that low power mode does only use RPV level input to control RPV because at low power the signals from steam flow and feed flow are not accurate enough to provide reliable inputs.
	D	Plausible if the candidate believes that the input for control is steam flow. Steam flow is used in other systems like the RWM for turn on/off points.

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

Question 22 Info																															
Question Type:	Multiple Choice																														
Status:	Active																														
Always select on test?	No																														
Authorized for practice?	No																														
Points:	1.00																														
Time to Complete:	0																														
Difficulty:	0.00																														
System ID:	2086415																														
User-Defined ID:	B NRC 2019																														
Cross Reference Number:	259002 G2.1.28																														
Topic:	ILT-5006-3p-002 three element control																														
Num Field 1:																															
Num Field 2:																															
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Comments:	<table border="1"> <thead> <tr> <th colspan="4">Psychometrics</th> </tr> <tr> <th>Level of Knowledge</th> <th>Difficulty</th> <th>Time Allowance (minutes)</th> <th>RO</th> </tr> </thead> <tbody> <tr> <td>Memory</td> <td></td> <td></td> <td>10CRF55.41(b)(7)</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th colspan="2">Source Documentation</th> </tr> </thead> <tbody> <tr> <td>Source:</td> <td> <input checked="" type="checkbox"/> New Exam item <input type="checkbox"/> Modified Bank <input type="checkbox"/> Previous NRC Exam item <input type="checkbox"/> Other Exam Bank <input type="checkbox"/> ILT Exam Bank </td> </tr> <tr> <td>Reference(s):</td> <td>SO 6C.1.D-3</td> </tr> <tr> <td>Learning Objective:</td> <td>PLOT - 5006-3p</td> </tr> <tr> <td>K/A System:</td> <td> 259002 Reactor Water level Control System Importance: RO / SRO 4.1/ 4.1 </td> </tr> <tr> <td>K/A Statement:</td> <td>G2.1.28 - Knowledge of the purpose and function of major system components and controls</td> </tr> <tr> <td>REQUIRED MATERIALS:</td> <td>None</td> </tr> <tr> <td>Notes and Comments:</td> <td>In order to make the distractor of RPV level plausible, the information about why adding steam flow and feed flow signals inputs is important could not be added. The candidate should use that information when making their selection if they understand how the system works to accurately control RPV level at power. This meets the K/A of "Knowledge of the purpose and function of major system components and controls" because the question requires knowledge of the selection of Low and High power modes. It also requires the knowledge of what inputs are needed for level control in High power mode</td> </tr> </tbody> </table>			Psychometrics				Level of Knowledge	Difficulty	Time Allowance (minutes)	RO	Memory			10CRF55.41(b)(7)	Source Documentation		Source:	<input checked="" type="checkbox"/> New Exam item <input type="checkbox"/> Modified Bank <input type="checkbox"/> Previous NRC Exam item <input type="checkbox"/> Other Exam Bank <input type="checkbox"/> ILT Exam Bank	Reference(s):	SO 6C.1.D-3	Learning Objective:	PLOT - 5006-3p	K/A System:	259002 Reactor Water level Control System Importance: RO / SRO 4.1/ 4.1	K/A Statement:	G2.1.28 - Knowledge of the purpose and function of major system components and controls	REQUIRED MATERIALS:	None	Notes and Comments:	In order to make the distractor of RPV level plausible, the information about why adding steam flow and feed flow signals inputs is important could not be added. The candidate should use that information when making their selection if they understand how the system works to accurately control RPV level at power. This meets the K/A of "Knowledge of the purpose and function of major system components and controls" because the question requires knowledge of the selection of Low and High power modes. It also requires the knowledge of what inputs are needed for level control in High power mode
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K/A Statement:	G2.1.28 - Knowledge of the purpose and function of major system components and controls																														
REQUIRED MATERIALS:	None																														
Notes and Comments:	In order to make the distractor of RPV level plausible, the information about why adding steam flow and feed flow signals inputs is important could not be added. The candidate should use that information when making their selection if they understand how the system works to accurately control RPV level at power. This meets the K/A of "Knowledge of the purpose and function of major system components and controls" because the question requires knowledge of the selection of Low and High power modes. It also requires the knowledge of what inputs are needed for level control in High power mode																														

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

23

ID: 2096830

Points: 1.00

ST-O-011-301-2 "Standby Liquid Control Pump A Functional Test for IST" was just performed,

AND

The following vibration data was recorded for the "A" SBLC pump.

INBOARD

- X1 - 0.725 IN/SEC PK
- Y1 - 0.550 IN/SEC PK

OUTBOARD

- X1 - 0.680 IN/SEC PK
- Y1 - 0.525 IN/SEC PK

Using a copy of ST-O-011-301-2 "Standby Liquid Control Pump A Functional Test for IST", what is the status of the 'A' SBLC pump vibration?

	INBOARD	OUTBOARD
A.	ALERT RANGE	ALERT RANGE
B.	ALERT RANGE	ACTION RANGE
C.	ACTION RANGE	ALERT RANGE
D.	ACTION RANGE	ACTION RANGE

Answer: C

Answer Explanation		
<<Choice		Basis or Justification
Correct:	C	The INBOARD Y1 vibration is in the Action Range. IAW the ST Data sheet 1. The OUTBOARD Y1 vibration is in the Alert Range. IAW the ST Data sheet 1.
Distractors:	A	Plausible as the X1 data point for INBOARD falls within the Alert Range, however since Y1 data point is in the Action Range, the INBOARD would be in the Action Range.
	B	Plausible as the X1 data point for INBOARD falls within the Alert Range, however since Y1 data point is in the Action Range, the INBOARD would be in the Action Range. Plausible if Data sheet 1 is misapplied and the OUTBOARD is classified in the Action Range
	D	Plausible as the INBOARD does fall in the Action range, however the OUTBOARD is only in the Alert Range.

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

Question 23 Info																															
Question Type:	Multiple Choice																														
Status:	Active																														
Always select on test?	No																														
Authorized for practice?	No																														
Points:	1.00																														
Time to Complete:	0																														
Difficulty:	0.00																														
System ID:	2096830																														
User-Defined ID:	B NRC 2019																														
Cross Reference Number:	211000 G2.2.12																														
Topic:	ILT-5011-9f-001 2019 NRC																														
Num Field 1:																															
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Level of Knowledge	Difficulty	Time Allowance (minutes)	RO																												
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Learning Objective:	PLOT - 5011-9f																														
K/A System:	211000 - Standby Liquid Control System Importance: RO / SRO 3.7 / 4.1																														
K/A Statement:	G2.2.12 - Knowledge of surveillance procedures																														
REQUIRED MATERIALS:	Copy of ST-O-011-301-2 "Standby Liquid Control Pump A Functional Test for IST"																														
Notes and Comments:	None																														

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

24

ID: 994765

Points: 1.00

The following conditions exist on Unit 2:

- An ATWS is in progress
- SBLC has NOT been initiated
- Reactor pressure is being controlled with RWCU in the Recirc Mode
- T-227-2 "Defeating RWCU Isolation Interlocks" has been completed
- A pipe break occurs in the suction line of the operating RWCU pump, causing RPV level to lower

Based on these conditions, the RWCU System will _____.

- A. isolate on low RPV level
- B. isolate on high system flow
- C. remain in service unless SBLC is initiated
- D. remain in service until T-227-2 is returned to normal

Answer: B

Answer Explanation		
Correct:	B	T-227-2 ONLY defeats RPV low level and SBLC initiation isolation. All other RWCU isolations, such as high flow, are still in effect. The pipe break on the RWCU suction line will cause a high flow isolation signal.
Distractors:	A	T-227-2 defeats RPV low level isolation. Plausible if candidate does not recall what isolations are defeated in T-227
	C	T-227-2 ONLY defeats RPV low level and SBLC initiation isolation. All other RWCU isolations, such as high flow, are still in effect. Plausible if candidate does not recall what isolations are defeated in T-227
	D	T-227-2 ONLY defeats RPV low level and SBLC initiation isolation. All other RWCU isolations, such as high flow, are still in effect. Plausible if candidate believes T-227 defeats all isolations.

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

Question 24 Info																																							
Question Type:	Multiple Choice																																						
Status:	Active																																						
Always select on test?	No																																						
Authorized for practice?	No																																						
Points:	1.00																																						
Time to Complete:	3																																						
Difficulty:	2.00																																						
System ID:	994765																																						
User-Defined ID:	B NRC 2019																																						
Cross Reference Number:	223002 K4.08																																						
Topic:	ILT5012-3D-011 The following conditions exist on Unit 2: *An ATWS is in progress *SLC has NOT be																																						
Num Field 1:																																							
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Reference(s):	T-227-2																																						
Learning Objective:	PLOT-5012-3D																																						
K/A System:	223002 - Primary Containment Isolation System / Nuclear Steam Supply Shut-off	Importance: RO / SRO 3.3 / 3.7																																					
K/A Statement:	K4.08 - Knowledge of PRIMARY CONTAINMENT ISOLATION SYSTEM/NUCLEAR STEAM SUPPLY SHUT-OFF design feature(s) and/or interlocks which provide for the following: Manual defeating of selected isolations during specified emergency conditions																																						
REQUIRED MATERIALS:	None																																						
Notes and Comments:	None																																						

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

25

ID: 994380

Points: 1.00

The Instrument Air System is in a normal lineup when the following occur:

- INSTRUMENT AIR DRYER TROUBLE (216 C-4) goes into alarm.
- B INSTRUMENT AIR HEADER LO PRESS (216 D-4) goes into alarm.
- "B" Instrument Air Header Pressure (PI-2425B) on Panel 20C012 is lowering
- "B" Instrument Air Receiver Pressure (PI-2429B) on Panel 20C012 is steady at 110 psig.
- The TBEO reports there is a valve malfunction on the "B" Instrument Air Dryer and that neither the "C" nor the "D" drying tower is in service.

Which one of the following describes:

(1) the on-going effect on "B" Instrument Air header pressure, assuming no operator action is taken,
AND

(2) what action(s) will mitigate this event?

- A. (1) Pressure will continue to lower.
(2) Cross-tie "A" and "B" Instrument Air headers.
- B. (1) Pressure will continue to lower.
(2) Cross-tie Unit 2 and Unit 3 "B" Instrument Air headers.
- C. (1) Pressure will recover when Service Air Isolation PCV-2428 is fully closed.
(2) Isolate the "B" Instrument Air Dryer.
- D. (1) Pressure will recover when Service Air Isolation PCV-2428 is fully closed.
(2) Bypass the "B" Instrument Air Dryer.

Answer: B

Answer Explanation

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

Correct:	B	The given conditions indicate both towers for the "B" Air Dryer are isolated, which means there is no flow to the "B" instrument air header from the "B" air compressor/receiver... "B" instrument air header pressure will continue to lower. The correct action to take for this, as directed in ON-119, is to cross-tie the Unit 2 and Unit 3 "B" instrument air headers.
Distractors:	A	Cross-tying the "A" and "B" instrument air headers will not be effective in restoring "B" instrument air header pressure since the "A" supply must pass through the "B" Air Dryer in order to supply the "B" header. This is plausible since the "A" and "B" instrument air headers can be crosstied.
	C	"B" instrument air header pressure will not recover when PCV-2428 closes since the supply from the "C" compressor/receiver must pass through the "B" Air Dryer in order to supply the "B" header. Plausible as the "C" air compressor is the normal backup to the "B" header.
	D	"B" instrument air header pressure will not recover when PCV-2428 closes since the supply from the "C" compressor/receiver must pass through the "B" Air Dryer in order to supply the "B" header. The candidate may also misinterpret the OP-AID and believe that the "B" Air Dryer can be bypassed. It cannot. Plausible as the "C" air compressor is the normal backup to the "B" header.

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

Question 25 Info																																							
Question Type:	Multiple Choice																																						
Status:	Active																																						
Always select on test?	No																																						
Authorized for practice?	No																																						
Points:	1.00																																						
Time to Complete:	2																																						
Difficulty:	3.00																																						
System ID:	994380																																						
User-Defined ID:	B NRC 2019																																						
Cross Reference Number:	300000A2.01																																						
Topic:	ILT-5036-7b-001 The Instrument Air System is in a normal lineup when the following occur: *INSTRU																																						
Num Field 1:	0.00																																						
Num Field 2:	0.00																																						
Text Field:																																							
Comments:	<table border="1"> <thead> <tr> <th colspan="4">Psychometrics</th> </tr> <tr> <th>Level of Knowledge</th> <th>Difficulty</th> <th>Time Allowance (minutes)</th> <th>RO</th> </tr> </thead> <tbody> <tr> <td>HIGH</td> <td></td> <td></td> <td>10CRF55.41(b)(7)</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th colspan="3">Source Documentation</th> </tr> </thead> <tbody> <tr> <td>Source:</td> <td colspan="2"> New Exam item Modified Bank X ILT Exam Bank (994380) </td> </tr> <tr> <td>Reference(s):</td> <td colspan="2">ON-119, M-320</td> </tr> <tr> <td>Learning Objective:</td> <td colspan="2">PLOT-5036-7b</td> </tr> <tr> <td>K/A System:</td> <td>300000 - Instrument Air System (IAS)</td> <td>Importance: RO / SRO 2.9 / 2.8</td> </tr> <tr> <td>K/A Statement:</td> <td colspan="2"> A2.01 - Ability to (a) predict the impacts of the following on the INSTRUMENT AIR SYSTEM and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal operation: Air dryer and filter malfunctions </td> </tr> <tr> <td>REQUIRED MATERIALS:</td> <td colspan="2">U/2 compressed air system Operator Aid S91-27</td> </tr> <tr> <td>Notes and Comments:</td> <td colspan="2">None</td> </tr> </tbody> </table>			Psychometrics				Level of Knowledge	Difficulty	Time Allowance (minutes)	RO	HIGH			10CRF55.41(b)(7)	Source Documentation			Source:	New Exam item Modified Bank X ILT Exam Bank (994380)		Reference(s):	ON-119, M-320		Learning Objective:	PLOT-5036-7b		K/A System:	300000 - Instrument Air System (IAS)	Importance: RO / SRO 2.9 / 2.8	K/A Statement:	A2.01 - Ability to (a) predict the impacts of the following on the INSTRUMENT AIR SYSTEM and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal operation: Air dryer and filter malfunctions		REQUIRED MATERIALS:	U/2 compressed air system Operator Aid S91-27		Notes and Comments:	None	
Psychometrics																																							
Level of Knowledge	Difficulty	Time Allowance (minutes)	RO																																				
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Notes and Comments:	None																																						

EXAMINATION ANSWER KEY

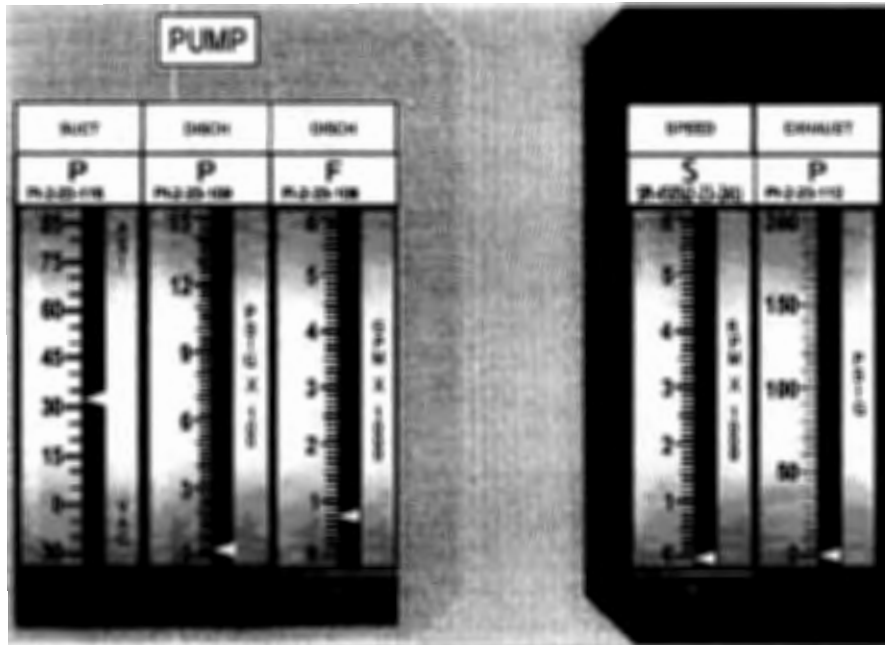
2019 NRC RO Exam rev1

26

ID: 2084632

Points: 1.00

Unit 2 HPCI is aligned per SO 23.1.A-2, "High Pressure Coolant Injection System Setup for Automatic or Manual Operation" when the following indications are observed:



Based on these indications, choose the correct statement.

- A. CST level will drop, close MO-2-23-15, "Steam Isolation".
- B. CST level will drop, close MO-2-23-17, "Cond Tank Suction"
- C. Torus level will drop, close MO-2-23-15, "Steam Isolation".
- D. Torus level will drop, close MO-2-23-57, "Torus Suction Outboard".

Answer: B

Answer Explanation

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

Choice		Basis or Justification
Correct:	B	With a normal valve lineup, MO-17 the CST suction valve will be open. The indications present indicate a leak in the pump discharge line. This will cause CST level to drop. Closing MO-17 will isolate the leak.
Distractors :	A	Plausible if the candidate misdiagnosis the issue and believes that steam is leaking by the supply valve causing the HPCI system to inject water as indicated by the discharge flow. This is however false as there is no discharge pressure, nor speed on the pump indicating it as a discharge pipe leak.
	C	Plausible if the candidate does not understand the normal HPCI line up is to the CST not the Torus. Plausible if the candidate misdiagnosis the issue and believes that steam is leaking by the supply valve causing the HPCI system to inject water as indicated by the discharge flow. This is however false as there is no discharge pressure, nor speed on the pump indicating it as a discharge pipe leak.
	D	Plausible if the candidate does not understand the normal HPCI line up is to the CST not the Torus.

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

Question 26 Info																																															
Question Type:	Multiple Choice																																														
Status:	Active																																														
Always select on test?	No																																														
Authorized for practice?	No																																														
Points:	1.00																																														
Time to Complete:	0																																														
Difficulty:	1.00																																														
System ID:	2084632																																														
User-Defined ID:	B NRC 2019																																														
Cross Reference Number:	206000 A4.07																																														
Topic:	ILT - 5023 5e 002 Describe the relationships between the High Pressure Coolant Injecti																																														
Num Field 1:																																															
Num Field 2:																																															
Text Field:																																															
Comments:	<table border="1"> <thead> <tr> <th colspan="4">Psychometrics</th> </tr> <tr> <th>Level of Knowledge</th> <th>Difficulty</th> <th>Time Allowance (minutes)</th> <th>RO</th> </tr> </thead> <tbody> <tr> <td>High</td> <td></td> <td></td> <td>10CRF55.41(b) 7</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th colspan="4">Source Documentation</th> </tr> </thead> <tbody> <tr> <td>Source:</td> <td colspan="3"> <input checked="" type="checkbox"/> New Exam item <input type="checkbox"/> Previous NRC Exam <input type="checkbox"/> Modified Bank <input type="checkbox"/> Exam Bank <input type="checkbox"/> ILT Exam Bank <div style="text-align: right;">Other</div> </td> </tr> <tr> <td>Reference(s):</td> <td colspan="3">M-365</td> </tr> <tr> <td>Learning Objective:</td> <td colspan="3">PLOT - 5023 5e</td> </tr> <tr> <td>K/A System:</td> <td>206000 - High Pressure Coolant Injection System</td> <td>Importance; / SRO</td> <td>RO 3.5</td> </tr> <tr> <td>K/A Statement:</td> <td colspan="3">A4.07 - Ability to manually operate and/or monitor in the control room ; Condensate storage tank level</td> </tr> <tr> <td>REQUIRED MATERIALS:</td> <td colspan="3">None</td> </tr> <tr> <td>Notes and Comments:</td> <td colspan="3">An embedded picture is used to convey the information the candidate would see in the Main Control Room for a discharge line break with HPCI not running. Using this information they can then determine where they can monitor changes and how to mitigate them making for a better K/A match</td> </tr> </tbody> </table>			Psychometrics				Level of Knowledge	Difficulty	Time Allowance (minutes)	RO	High			10CRF55.41(b) 7	Source Documentation				Source:	<input checked="" type="checkbox"/> New Exam item <input type="checkbox"/> Previous NRC Exam <input type="checkbox"/> Modified Bank <input type="checkbox"/> Exam Bank <input type="checkbox"/> ILT Exam Bank <div style="text-align: right;">Other</div>			Reference(s):	M-365			Learning Objective:	PLOT - 5023 5e			K/A System:	206000 - High Pressure Coolant Injection System	Importance; / SRO	RO 3.5	K/A Statement:	A4.07 - Ability to manually operate and/or monitor in the control room ; Condensate storage tank level			REQUIRED MATERIALS:	None			Notes and Comments:	An embedded picture is used to convey the information the candidate would see in the Main Control Room for a discharge line break with HPCI not running. Using this information they can then determine where they can monitor changes and how to mitigate them making for a better K/A match		
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EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

27

ID: 2078555

Points: 1.00

Unit 2 is at 100% power with 2A CRD pump in service

- "A CRD WATER PUMP TRIP" (ARC 211 F-1) alarms

The trip of the 2A CRD pump will:

- A. cause Drywell pressure to rise
- B. cause Recirculation pump seal temperatures to rise
- C. raise the probability of internal contamination of the Recirculation pump motor
- D. cause level instrumentation to experience "notching" during normal power operations

Answer: B

Answer Explanation		
Correct:	B	A trip of the running CRD pump will cause the control room to enter ON-107 "Loss of CRD Regulating Function" This would cause the operator to monitor Recirc Pump seal temperatures as they would rise with the loss of the CRD seal purge.
Distractors:	A	Plausible as CRD provides cooling to components in the Drywell, however a Drywell pressure rise would be caused by a loss of Drywell cooling.
	C	The Recirc motor is not a wet motor and would not be contaminated with the loss of CRD purge flow. Plausible if candidate confuses the Recirc motor with the RWCU motor. The RWCU motor also receives a purge flow from CRD, however in this case it prevents the wet RWCU motor from being contaminated with Reactor water.
	D	Plausible as the loss of CRD would cause notching in level instrumentation due to the loss of the Backfill system. However this notching would only occur during a depress below 450 psig.

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

Question 27 Info																																							
Question Type:	Multiple Choice																																						
Status:	Active																																						
Always select on test?	No																																						
Authorized for practice?	No																																						
Points:	1.00																																						
Time to Complete:	3																																						
Difficulty:	1.00																																						
System ID:	2078555																																						
User-Defined ID:	B NRC 2019																																						
Cross Reference Number:	201001 K1.03																																						
Topic:	ILT-5003A-5c CRD connection to Recirc pump seal purge																																						
Num Field 1:																																							
Num Field 2:																																							
Text Field:																																							
Comments:	<table border="1"> <thead> <tr> <th colspan="4">Psychometrics</th> </tr> <tr> <th>Level of Knowledge</th> <th>Difficulty</th> <th>Time Allowance (minutes)</th> <th>RO</th> </tr> </thead> <tbody> <tr> <td>Memory</td> <td></td> <td></td> <td>10CRF55.41(b)(3)</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th colspan="3">Source Documentation</th> </tr> </thead> <tbody> <tr> <td>Source:</td> <td colspan="2"> <input checked="" type="checkbox"/> New Exam item <input type="checkbox"/> Modified Bank <input type="checkbox"/> ILT Exam Bank </td> </tr> <tr> <td>Reference(s):</td> <td colspan="2">ON-107</td> </tr> <tr> <td>Learning Objective:</td> <td colspan="2">PLOT-5003A-5c</td> </tr> <tr> <td>K/A System:</td> <td>201001 - Control Rod Drive Hydraulic System</td> <td>Importance: RO / SRO 3.1 / 3.1</td> </tr> <tr> <td>K/A Statement:</td> <td colspan="2"> K1.03 - Knowledge of the physical connections and/or cause effect relationships between CONTROL ROD DRIVE HYDRAULIC SYSTEM and the following: Recirculation pumps (seal purge): </td> </tr> <tr> <td>REQUIRED MATERIALS:</td> <td colspan="2">None</td> </tr> <tr> <td>Notes and Comments:</td> <td colspan="2">None</td> </tr> </tbody> </table>			Psychometrics				Level of Knowledge	Difficulty	Time Allowance (minutes)	RO	Memory			10CRF55.41(b)(3)	Source Documentation			Source:	<input checked="" type="checkbox"/> New Exam item <input type="checkbox"/> Modified Bank <input type="checkbox"/> ILT Exam Bank		Reference(s):	ON-107		Learning Objective:	PLOT-5003A-5c		K/A System:	201001 - Control Rod Drive Hydraulic System	Importance: RO / SRO 3.1 / 3.1	K/A Statement:	K1.03 - Knowledge of the physical connections and/or cause effect relationships between CONTROL ROD DRIVE HYDRAULIC SYSTEM and the following: Recirculation pumps (seal purge):		REQUIRED MATERIALS:	None		Notes and Comments:	None	
Psychometrics																																							
Level of Knowledge	Difficulty	Time Allowance (minutes)	RO																																				
Memory			10CRF55.41(b)(3)																																				
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Reference(s):	ON-107																																						
Learning Objective:	PLOT-5003A-5c																																						
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REQUIRED MATERIALS:	None																																						
Notes and Comments:	None																																						

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

28

ID: 2086254

Points: 1.00

Both units are operating at 100% power

- the 4 Aux Bus de-energizes due to a sustained electrical fault

Which one of the following identifies (1) the unit affected **AND** (2) operator response?

- A. (1) Unit 2
(2) Enter OT-112 "Unexpected / Unexplained Change in Core Flow"
- B. (1) Unit 3
(2) Enter OT-112 "Unexpected / Unexplained Change in Core Flow"
- C. (1) Unit 2
(2) Scram the plant and enter T-101 "RPV control"
- D. (1) Unit 3
(2) Scram the plant and enter T-101 "RPV control"

Answer: D

Answer Explanation		
Choice		Basis or Justification
Correct:	D	The 3B and 3C Condensate pumps trip because they normally receive power from 4 Aux Bus. Since Unit 3 is operating at 100% power, reactor level will quickly lower to the scram setpoint of 1 inch. Operators are expected to scram the plant and enter T-101 "RPV level control"
Distracters:	A	Plausible as this is the response if the #1 Aux bus had tripped. The Recirc pumps are supplied by AUX busses for both units, however U/2 recirc pumps are supplied by the 1 and 2 Aux bus and U/3 recirc pumps are supplied by the 3 and 4 Aux bus. The candidate may misunderstand the 13Kv lineup and believe only one condensate pump tripped and one recirc pump. At which time they could survive a loss of the 1 Aux bus.
	B	Plausible as this is the response if the #3 Aux bus had tripped. The Recirc pumps are supplied by AUX busses for both units, however U/2 recirc pumps are supplied by the 1 and 2 Aux bus and U/3 recirc pumps are supplied by the 3 and 4 Aux bus. The candidate may misunderstand the 13Kv lineup and believe only one condensate pump tripped and one recirc pump. At which time they could survive a loss of the 3 Aux bus.
	C	Plausible as this is the response if the #2 Aux bus had tripped. The 2B and 2C Condensate pumps trip because they normally receive power from 2 Aux Bus. Since Unit 2 is operating at 100% power, reactor level will quickly lower to the scram setpoint of 1 inch. Operators are expected to scram the plant and enter T-101 "RPV level control" The candidate may misunderstand the 13Kv lineup and believe only one condensate pump tripped and one recirc pump. At which time they could survive a loss of the 1 Aux bus.

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

Question 28 Info			
Question Type:	Multiple Choice		
Status:	Active		
Always select on test?	No		
Authorized for practice?	No		
Points:	1.00		
Time to Complete:	3		
Difficulty:	1.00		
System ID:	2086254		
User-Defined ID:	B NRC 2019		
Cross Reference Number:	256000 K2.01		
Topic:	ILT-5005-2a Loss of 4 Aux Bus		
Num Field 1:			
Num Field 2:			
Text Field:			
Comments:	Psychometrics		
	Level of Knowledge	Difficulty	Time Allowance (minutes)
	HIGH		
			RO
			10CFR55.41(b) (4)
	Source Documentation		
	Source:	<input checked="" type="checkbox"/> New Exam item <input type="checkbox"/> Modified Bank <input type="checkbox"/> Bank <input type="checkbox"/> Previous NRC Exam <input type="checkbox"/> Other Exam <input type="checkbox"/> ILT Exam Bank	
	Reference(s):	ARC-319 B-2, T-101	
	Learning Objective:	PLOT-5005 2a	
	K/A System:	256000 Reactor Condensate	Importance; RO 2.7
	K/A Statement:	K2.01 - Knowledge of electrical power supplies to the following: System pumps	
	REQUIRED MATERIALS:	NONE	
	Notes and Comments:		

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

29

ID: 2086269

Points: 1.00

Both Units are at 100% power

- A fire is reported in the Cable Spreading Room
- It has been determined that the fire jeopardizes safe shutdown
- The Cardox System has failed to initiate

When control is established outside of the control room _____.

- A. **ONLY** SE-1 "Plant Shutdown from the Remote Shutdown Panel" must be entered
- B. **ONLY** SE-10 "Plant Shutdown from the Alternative Shutdown Panel" must be entered
- C. SE-1 "Plant Shutdown from the Remote Shutdown Panel" **AND** T-101 "RPV Control" must be performed concurrently
- D. SE-10 "Plant Shutdown from the Alternative Shutdown Panel" **AND** T-101 "RPV Control" must be performed concurrently

Answer: B

Answer Explanation		
Choice		Basis or Justification
Correct:	B	SE-10 is directed out of T-325 which is performed for a fire in the cable spreading room. SE-10 is directed when it is determined that the fire jeopardizes safe shutdown. With the cardox system failed, there is no quick way to extinguish the fire and the Main Control Room would require evacuation. IAW SE-10 Bases "With the exception of T-100, execution of the TRIP procedures should be suspended at entry into SE-10. The TRIP procedures will not be available outside the Control Room and the symptomatic response of the TRIP procedures may not be appropriate considering the event specific design of the ASD equipment." Therefore SE-10 is the only procedure entered
Distracters:	A	Plausible as SE-1 is used when evacuating the Main Control Room, however the Entry condition is that MCR evacuation required AND SE-10 has not been entered. SE-10 is required out of ON-114 because a fire in the cable spreading room has jeopardized safe shutdown, therefore you would not enter SE-1.
	C	Plausible as SE-1 is used when evacuating the Main Control Room, however the Entry condition is that MCR evacuation required AND SE-10 has not been entered. SE-10 is required out of ON-114 because a fire in the cable spreading room has jeopardized safe shutdown, therefore you would not enter SE-1. T-101 entry is also plausible as SE-1 can be used concurrently with the TRIP procedures
	D	Plausible since SE-10 is entered and part of the steps in SE-10 is to scram the plant, which at 100% power would lead to a T-101 entry. However within the SE-10 bases, execution of the TRIP procedures would be suspended upon entry into SE-10.

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

Question 29 Info																																							
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Status:	Active																																						
Always select on test?	No																																						
Authorized for practice?	No																																						
Points:	1.00																																						
Time to Complete:	3																																						
Difficulty:	2.00																																						
System ID:	2086269																																						
User-Defined ID:	B NRC 2019																																						
Cross Reference Number:	286000 K3.03																																						
Topic:	ILT-1555-1-017 SE-10, Level control with fire																																						
Num Field 1:																																							
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EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

30

ID: 994105

Points: 1.00

Unit 2 is operating at normal full power. Outage Services is performing a move of an old jet pump within the Spent Fuel Pool when the Aux Hoist fails and the jet pump falls onto irradiated fuel.

The following indications are observed:

- REFUELING FLOOR VENT EXHAUST HI RADIATION alarm (218 A-1)
- REAC BLDG OR REFUELING FLOOR VENT HI RAD TRIP alarm (218 D-4)

Refuel Floor Exh Rad Trip Units read:

Channel A: 28 mr/hr

Channel B: 32 mr/hr

Channel C: 3 mr/hr

Channel D: 5 mr/hr

Based on the above radiation monitor conditions, which one of the following is the correct automatic response of the Refuel Floor Ventilation and Standby Gas Treatment (SBGT)?

- A. Refuel Floor Ventilation Isolates.
SBGT initiates and aligns.
- B. Refuel Floor Ventilation continues to operate.
SBGT initiates and aligns.
- C. Refuel Floor Ventilation Isolates.
SBGT does NOT initiate.
- D. Refuel Floor Ventilation continues to operate.
SBGT does NOT initiate.

Answer: A

Answer Explanation

EXAMINATION ANSWER KEY

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Choice		Basis or Justification
Correct:	A	Refuel Floor and Reactor Building ventilation will isolate on a High Rad signal on channels A or C and B or D. Since channels A and B are high (>10 mr/hr) the Refuel Floor Ventilation would isolate. On the same signals SBTG would align and initiate.
Distracters:	B	Refuel Floor and Reactor Building ventilation will isolate on a High Rad signal on channels A or C and B or D. Since channels A and B are high (>10 mr/hr) the Refuel Floor Ventilation would isolate. Plausible if candidate does not recall isolation signals or confuses Refuel Floor Ventilation isolation signals with Control room ventilation which works on a C or D isolation logic.
	C	Channels A and B are high (>10 mr/hr). These are initiation signals for SBTG and it would align and initiate. Plausible if candidate does not recall SBTG initiation signals or confuses it with CREV initiation signals which work on a C or D logic.
	D	Refuel Floor and Reactor Building ventilation will isolate on a High Rad signal on channels A or C and B or D. Since channels A and B are high (>10 mr/hr) the Refuel Floor Ventilation would isolate. On the same signals SBTG would align and initiate. This is plausible if candidate does not recall proper isolation and initiation logic, or confuses the systems with the CREV system that works on a C or D logic.

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

Question 30 Info																																							
Question Type:	Multiple Choice																																						
Status:	Active																																						
Always select on test?	No																																						
Authorized for practice?	No																																						
Points:	1.00																																						
Time to Complete:	3																																						
Difficulty:	1.00																																						
System ID:	994105																																						
User-Defined ID:	B NRC 2019																																						
Cross Reference Number:	288000K4.01																																						
Topic:	ILT-5040B-4b-006 hi rad on refuel floor																																						
Num Field 1:																																							
Num Field 2:																																							
Text Field:																																							
Comments:	<table border="1"> <thead> <tr> <th colspan="4">Psychometrics</th> </tr> <tr> <th>Level of Knowledge</th> <th>Difficulty</th> <th>Time Allowance (minutes)</th> <th>RO</th> </tr> </thead> <tbody> <tr> <td>HIGH</td> <td></td> <td></td> <td>10CFR55.41(b) (7)</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th colspan="3">Source Documentation</th> </tr> </thead> <tbody> <tr> <td>Source:</td> <td colspan="2"> <div> <div>New Exam item</div> <div>Modified Bank</div> <div>Bank</div> <div>X ILT Exam Bank (994105)</div> </div> <div>Previous NRC Exam</div> <div>Other Exam</div> </td> </tr> <tr> <td>Reference(s):</td> <td colspan="2">ARC-214 D-1, E-1 and ARC-218 A-1, D-4</td> </tr> <tr> <td>Learning Objective:</td> <td colspan="2">PLOT-5040B-4b</td> </tr> <tr> <td>K/A System:</td> <td>288000 - Plant Ventilation Systems</td> <td> Importance; RO / SRO 3.7 / 3.9 </td> </tr> <tr> <td>K/A Statement:</td> <td colspan="2"> K4.01 - Knowledge of PLANT VENTILATION SYSTEMS design feature(s) and/or interlocks which provide for the following: Automatic initiation of standby gas treatment system </td> </tr> <tr> <td>REQUIRED MATERIALS:</td> <td colspan="2">NONE</td> </tr> <tr> <td>Notes and Comments:</td> <td colspan="2"></td> </tr> </tbody> </table>			Psychometrics				Level of Knowledge	Difficulty	Time Allowance (minutes)	RO	HIGH			10CFR55.41(b) (7)	Source Documentation			Source:	<div> <div>New Exam item</div> <div>Modified Bank</div> <div>Bank</div> <div>X ILT Exam Bank (994105)</div> </div> <div>Previous NRC Exam</div> <div>Other Exam</div>		Reference(s):	ARC-214 D-1, E-1 and ARC-218 A-1, D-4		Learning Objective:	PLOT-5040B-4b		K/A System:	288000 - Plant Ventilation Systems	Importance; RO / SRO 3.7 / 3.9	K/A Statement:	K4.01 - Knowledge of PLANT VENTILATION SYSTEMS design feature(s) and/or interlocks which provide for the following: Automatic initiation of standby gas treatment system		REQUIRED MATERIALS:	NONE		Notes and Comments:		
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REQUIRED MATERIALS:	NONE																																						
Notes and Comments:																																							

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

31

ID: 1137551

Points: 1.00

During a Radwaste Floor Drain Sample Tank release to the Conowingo Pond per ST-C-095-805-2, "Liquid Radwaste Discharge", the RADWASTE DISCH HI RADIATION (218 B-2) alarm is received.

Upon receipt of THIS alarm, the release __ (1) __ automatically isolate.
The radiation units associated with this release are measured in __ (2) __.

- A. (1) will not
(2) mRem
- B. (1) will not
(2) counts/second
- C. (1) will
(2) mRem
- D. (1) will
(2) counts/second

Answer: B

Answer Explanation		
Choice		Basis or Justification
Correct:	B	The high alarm level does not cause the isolation. The dose rate is calculated in counts per second as determined by procedures ST-C-095-805-2 "Liquid Radwaste Discharge".
Distractor s:	A	Part 1 is correct, the high alarm level does not cause the isolation. Part 2 is not correct, the isolation is on dose rate not dose. Plausible if the candidate confuses or does not understand the difference between dose and dose rate.
	C	Part 1 is not correct the hi alarm level does not cause the isolation. Plausible if the candidate does not understand the Radwaste isolation logic and the associated alarms. Part 2 is not correct, the isolation occurs bases on dose rate not on dose. Plausible if the candidate confuses or does not understand the difference between dose and dose rate.
	D	Part 1 is not correct the hi alarm level does not cause the isolation. Plausible if the candidate does not understand the Radwaste isolation logic and the associated alarms.

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

Question 31 Info																																															
Question Type:	Multiple Choice																																														
Status:	Active																																														
Always select on test?	No																																														
Authorized for practice?	No																																														
Points:	1.00																																														
Time to Complete:	0																																														
Difficulty:	1.00																																														
System ID:	1137551																																														
User-Defined ID:	B NRC 2019																																														
Cross Reference Number:	268000K5.01																																														
Topic:	ILT-5020-4a-002 2015 NRC																																														
Num Field 1:	2015 NRC																																														
Num Field 2:																																															
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REQUIRED MATERIALS:	None																																														
Notes and Comments:	None																																														

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

32

ID: 2086274

Points: 1.00

Unit 2 is operating at 70% power.

No rod block or half-scam signals are present.

- The reference Simulated Thermal Power signal from APRM 2 to the Rod Block Monitor system fails upscale

How does the Rod Block Monitor system respond to this event if a rod is subsequently selected?

- A. The 'A' Rod Block Monitor channel receives an INOP trip signal.
- B. The 'A' Rod Block Monitor channel adjusts its trip setpoint to the High Power setpoint.
- C. The 'B' Rod Block Monitor channel receives an INOP trip signal.
- D. The 'B' Rod Block Monitor channel adjusts its trip setpoint to the High Power setpoint.

Answer: D

Answer Explanation		
Choice		Basis or Justification
Correct:	D	APRM 2 and 4 signals go to the 'B' RBM. The setpoint goes to High Trip setpoint when APRM power goes above 83.1%.
Distractor s:	A	Plausible as APRM signals also go to the 'A' RBM, however APRM 1 and 3 signals go to the 'A' RBM. Plausible if candidate misunderstands that a failed APRM signal does not cause the RBM to go INOP and would only cause a change in the trip setpoint. Inop only occurs with mode switch out of operate, critical self test fault, low LPRM count, or failure to null.
	B	Plausible as APRM signals also go to the 'A' RBM, however APRM 1 and 3 signals go to the 'A' RBM.
	C	Plausible if candidate misunderstands that a failed APRM signal does not cause the RBM to go INOP and would only cause a change in the trip setpoint. Inop only occurs with mode switch out of operate, critical self test fault, low LPRM count, or failure to null.

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

Question 32 Info																															
Question Type:	Multiple Choice																														
Status:	Active																														
Always select on test?	No																														
Authorized for practice?	No																														
Points:	1.00																														
Time to Complete:	3																														
Difficulty:	2.00																														
System ID:	2086274																														
User-Defined ID:	B NRC 2019																														
Cross Reference Number:	215002 K 6.04																														
Topic:	ILT-5060-6c-003 APRM ref. Signal to RBM fails upscale																														
Num Field 1:																															
Num Field 2:																															
Text Field:	A																														
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K/A System:	<div>215002 - Rod Block Monitor System</div> <div>Importance: RO / SRO 2.8/ 3.0</div>																														
K/A Statement:	K6.04 - Knowledge of the effect that a loss or malfunction of the following will have on the ROD BLOCK MONITOR SYSTEM : APRM reference channel																														
REQUIRED MATERIAL S:	None																														
Notes and Comments:	None																														

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

33

ID: 1097709

Points: 1.00

Unit 2 was operating at 100% power when the "A" Recirc Pump trips.

The URO should expect oscillations of RPV level indication on __ (1) __

due to turbulence near the __ (2) __.

- A. (1) LI-2-2-3-85A
(2) variable leg tap
- B. (1) LI-2-2-3-85A
(2) reference leg tap
- C. (1) LI-2-2-3-85B
(2) variable leg tap
- D. (1) LI-2-2-3-85B
(2) reference leg tap

Answer: C

Answer Explanation		
Choice		Basis or Justification
Correct:	C	OT-112 bases states; When only one Recirculation Pump is operating, the indication associated with one Wide Range RPV level variable leg may oscillate. These oscillations are caused by turbulent reverse flow through the idle Jet Pumps near their variable leg tap. If the "A" Recirculation Pump is tripped, then the 2B Wide Range instruments will oscillate. Therefore for a trip of the "A" Recirc pump, the LI-2-2-3-85B would be affected.
Distractors:	A	Plausible if the candidate does not recall that the variable leg tap for the LI-85A is near the jet pumps supplied by the "B" Recirc pump.
	B	Plausible if the candidate does not recall that the variable leg tap for the LI-85A is near the jet pumps supplied by the "B" Recirc pump. Plausible if the candidate does not understand that it is the variable leg that is near the jet pump suction and not the reference leg.
	D	Plausible if the candidate does not understand that it is the variable leg that is near the jet pump suction and not the reference leg.

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

Question 33 Info																															
Question Type:	Multiple Choice																														
Status:	Active																														
Always select on test?	No																														
Authorized for practice?	No																														
Points:	1.00																														
Time to Complete:	0																														
Difficulty:	0.00																														
System ID:	1097709																														
User-Defined ID:	B NRC 2019																														
Cross Reference Number:	216000A1.01																														
Topic:	ILT - 1540-4-021 OT-112																														
Num Field 1:	C CERT																														
Num Field 2:																															
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Comments:	<table border="1"> <thead> <tr> <th colspan="4">Psychometrics</th> </tr> <tr> <th>Level of Knowledge</th> <th>Difficulty</th> <th>Time Allowance (minutes)</th> <th>RO</th> </tr> </thead> <tbody> <tr> <td>Memory</td> <td></td> <td></td> <td>10CFR55.41(b)7</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th colspan="2">Source Documentation</th> </tr> </thead> <tbody> <tr> <td>Source:</td> <td> <div> <div>New Exam item</div> <div>Previous NRC Exam</div> <div>Modified Bank</div> <div>Other Exam Bank</div> <div>X ILT Exam Bank</div> </div> </td> </tr> <tr> <td>Reference(s):</td> <td>OT-112</td> </tr> <tr> <td>Learning Objective:</td> <td>PLOT - 1540 4</td> </tr> <tr> <td>K/A System:</td> <td> <div>216000 - Nuclear Boiler Instrumentation</div> <div>Importance: RO / SRO 3.4/3.3</div> </td> </tr> <tr> <td>K/A Statement:</td> <td>A 1.01 - Ability to predict and/or monitor changes in parameters associated with operating the Nuclear Boiler Instrumentation controls including: Recorders and meters</td> </tr> <tr> <td>REQUIRED MATERIALS:</td> <td>None</td> </tr> <tr> <td>Notes and Comments:</td> <td>None</td> </tr> </tbody> </table>			Psychometrics				Level of Knowledge	Difficulty	Time Allowance (minutes)	RO	Memory			10CFR55.41(b)7	Source Documentation		Source:	<div> <div>New Exam item</div> <div>Previous NRC Exam</div> <div>Modified Bank</div> <div>Other Exam Bank</div> <div>X ILT Exam Bank</div> </div>	Reference(s):	OT-112	Learning Objective:	PLOT - 1540 4	K/A System:	<div>216000 - Nuclear Boiler Instrumentation</div> <div>Importance: RO / SRO 3.4/3.3</div>	K/A Statement:	A 1.01 - Ability to predict and/or monitor changes in parameters associated with operating the Nuclear Boiler Instrumentation controls including: Recorders and meters	REQUIRED MATERIALS:	None	Notes and Comments:	None
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REQUIRED MATERIALS:	None																														
Notes and Comments:	None																														

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

34

ID: 2083806

Points: 1.00

Given the following:

- Unit 3 is operating at 100% power
- A feedwater heater isolation occurs
- The crew enters OT-104 "Positive Reactivity Insertion"

To comply with OT-104 "Positive Reactivity Insertion" the operator must first ____ (1) ____ to a power level no greater than ____ (2) ____.

- A. (1) insert control rods
(2) 100% power
- B. (1) insert control rods
(2) 90% power
- C. (1) reduce Recirc flow
(2) 100% power
- D. (1) reduce Recirc flow
(2) 90% power

Answer: C

Answer Explanation		
Correct:	C	Per OT-104 "Positive Reactivity Insertion" Step 2.1, if a loss of feedwater heating has occurred, then reduce power via recirc flow to less than or equal to the pre-transient level.
Distractors:	A	Incorrect first action – This is plausible because later in the procedure the operator will insert control rods in order to exit the MELLLA+ region. The plant is in the MELLLA+ region down to 67.3% power for Unit 3 Correct power level
	B	Incorrect first action – This is plausible because later in the procedure the operator will insert control rods in order to exit the MELLLA+ region. The plant is in the MELLLA+ region down to 67.3% power for Unit 3. Incorrect power level - plausible because the 10% lower than pre-transient level is used when the cause of the positive reactivity insertion cannot be determined. It was caused by the loss of feedwater heating as stated in the stem.
	D	Correct first action Incorrect power level - plausible because the 10% lower than pre-transient level is used when the cause of the positive reactivity insertion cannot be determined. It was caused by the loss of feedwater heating as stated in the stem.

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

Question 34 Info																																															
Question Type:	Multiple Choice																																														
Status:	Active																																														
Always select on test?	No																																														
Authorized for practice?	No																																														
Points:	1.00																																														
Time to Complete:	3																																														
Difficulty:	2.00																																														
System ID:	2083806																																														
User-Defined ID:	B NRC 2019																																														
Cross Reference Number:	259001 A2.02																																														
Topic:	ILT-1540-3-024 Given the following: *Unit 3 is operating at 100% power. *A loss of feedwater heating																																														
Num Field 1:																																															
Num Field 2:																																															
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Notes and Comments:	None																																														

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

35

ID: 2084425

Points: 1.00

Unit 3 is operating at 100% power when the following occurs

- a grid disturbance causes a 10% load reduction on the grid
- conditions stabilize with grid frequency at 61 Hz

When the Main Turbine conditions stabilize

Main Turbine Speed will be (1) 1800 rpm

AND

Reactor pressure will (2) the pre-transient level.

- A. (1) above
(2) be above
- B. (1) above
(2) return to
- C. (1) below
(2) be above
- D. (1) below
(2) return to

Answer: B

Answer Explanation

Choice		Basis or Justification
Correct:	B	A load reject will cause Main turbine speed to rise. The rising speed will cause the control valves to begin to close to stop the rise in main turbine speed. As the control valves close, pressure set will cause the bypass valves to open to maintain Reactor pressure. When steady state conditions are reached, Main Turbine speed will be above 1800 rpm but pressure set will have returned RPV pressure to the pre-transient value.
Distractors:	A	Plausible if the candidate does not understand how the different control sections of EHC logic work to maintain conditions and does not take into account how the pressure control section works to maintain RPV pressure and Therefore Reactor power.
	C	Plausible if the candidate does not understand that a load reject will make turbine speed rise. Plausible if the candidate does not understand how the different control sections of EHC logic work to maintain conditions and does not take into account how the pressure control section works to maintain RPV pressure and Therefore Reactor power.
	D	Plausible if the candidate does not understand that a load reject will make turbine speed rise.

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

Question 35 Info																																															
Question Type:	Multiple Choice																																														
Status:	Active																																														
Always select on test?	No																																														
Authorized for practice?	No																																														
Points:	1.00																																														
Time to Complete:	0																																														
Difficulty:	1.00																																														
System ID:	2084425																																														
User-Defined ID:	B NRC 2019																																														
Cross Reference Number:	241000A301																																														
Topic:	ILT - 5001DL 3c-002. Describe the EHC Logic System design feature(s) and/or interlock(s)																																														
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EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

36

ID: 2083811

Points: 1.00

The following conditions exist on Unit 3:

- Unit was shutdown for refueling outage on January 5th at 03:00.
- 320 Fuel Assemblies from the core have been offloaded (fuel placed in Fuel Pool).
- Prior to the shutdown, Fuel Pool heat load was negligible.
- At 03:00 on January 23rd of the same year, the Fuel Pool temperature is 100°F.

If a complete loss of cooling to the Fuel Pool occurs on January 23rd at 03:00, then determine the approximate amount of time it will take for the Fuel Pool water temperature to rise to 150 degrees (assuming cooling to the Fuel Pool is NOT restored).

- A. 3 hours
- B. 7 hours
- C. 11 hours
- D. 15 hours

Answer: B

Answer Explanation		
Correct:	B	Per AO 19.3-3 for a 320 bundle offload at 18 days after S/D (initial 100 deg.)
Distractors:	A	Represents the time to 150 degrees from a complete core offload. Plausible if candidate misinterprets a 320 bundle offload as a complete core offload and chooses the wrong chart
	C	Represents the time to 150 degrees from a 320 bundle offload (initial 70 degrees). Plausible if candidate assumes highest curve on chart is the 100 degree curve.
	D	Represents the time to boil from a 320 bundle core offload. Plausible if candidate plots on the time to boil chart and not the 150 degree chart

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

Question 36 Info																															
Question Type:	Multiple Choice																														
Status:	Active																														
Always select on test?	No																														
Authorized for practice?	No																														
Points:	1.00																														
Time to Complete:	5																														
Difficulty:	2.00																														
System ID:	2083811																														
User-Defined ID:	B NRC 2019																														
Cross Reference Number:	233000 A4.05																														
Topic:	ILT-5019-3a-002 Loss of FPC - time to 150F																														
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Notes and Comments:	None																														

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

37

ID: 993898

Points: 1.00

A LOCA occurred on Unit 2

RHR was placed in Drywell Sprays, with the following conditions noted:

- Drywell Pressure: 15 psig
- RPV Level: -50 inches
- RPV Pressure: 600 psig

10 Minutes later, the following conditions exist:

- Drywell Pressure: 10 psig
- RPV Level: -180 inches
- RPV Pressure: 400 psig

Which one of the following statements correctly describes the expected response of RHR?

- A. Drywell Sprays will automatically secure.
RHR will NOT automatically lineup to inject.
- B. Drywell Sprays will automatically secure.
RHR will automatically lineup to inject.
- C. The PRO must manually secure Drywell Sprays.
RHR will NOT automatically lineup to inject.
- D. The PRO must manually secure Drywell Sprays.
RHR will automatically lineup to inject.

Answer: D

Answer Explanation		
Choice		Basis or Justification
Correct:	D	T-204 directs the spray valves be closed upon receipt of a LOCA signal because the spray valves do not receive an automatic closed signal under these conditions.
Distractors:	A	Plausible if the candidate does not understand that the spray valves will not close because the containment spray override key has been used. Plausible if the candidate does not believe the initiation signal will open the injection valve because the containment spray override key has been used.
	B	Plausible if the candidate does not understand that the spray valves will not close because the containment spray override key has been used.
	C	Plausible if the candidate does not believe the initiation signal will open the injection valve because the containment spray override key has been used.

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

Question 37 Info																																															
Question Type:	Multiple Choice																																														
Status:	Active																																														
Always select on test?	No																																														
Authorized for practice?	No																																														
Points:	1.00																																														
Time to Complete:	0																																														
Difficulty:	1.00																																														
System ID:	993898																																														
User-Defined ID:	B NRC 2019																																														
Cross Reference Number:	226001 2.4.49																																														
Topic:	ILT-5010-5d-002 Drywell Spray Valve Status post LOCA																																														
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REQUIRED MATERIALS:	None																																														
Notes and Comments:	None																																														

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

38

ID: 994800

Points: 1.00

Both units are operating at 100% power with the following conditions present:

- RIS-0760D "Main Control Room Ventilation Radiation Monitor" is failed with a trip inserted per GP-25 Appendix 14 "MCR Ventilation Isolation, Division II"
- CONTROL ROOM RAD MONITOR DIV II INITIATED (003 A-3) is lit due to the GP-25 trip

One hour later, an annunciator is received and the PRO observes:

- CONTROL ROOM VENT SUPPLY FAN HI-LO (003 A-1) is in alarm
- CONTROL ROOM VENT SUPPLY LO FLOW CREV START (003 A-5) is in alarm
- CONTROL ROOM RAD MONITOR DIV I INITIATED (003 A-2) is in alarm
- Flow Recorder FR-0765 indicates 0 scfm
- RIS-0760C "Main Control Room Ventilation Radiation Monitor" is failed upscale

Based on these conditions, the Control Room Emergency Ventilation System has _____.

- A. started due to the low flow condition
- B. NOT started as indicated by the low flow condition
- C. started because the Rad Monitor initiation logic is satisfied
- D. NOT started because the Rad Monitor initiation logic is NOT satisfied

Answer: A

Answer Explanation		
Correct:	A	The CREV system is in service as indicated by 003 A-5, and was initiated by Low Flow. The Rad Monitor combination would NOT result in CREV initiation (Rad Monitor logic is "A <u>or</u> B AND C <u>or</u> D").
Distracters:	B	Plausible if the candidate misunderstands system alignment. The low flow signal is actually from normal Control Room Ventilation and is normal during a CREV initiation.
	C	Plausible because the alarms indicate Div I and Div II initiated, even though the logic for CREV initiation due to Rad Monitors is NOT satisfied (Rad Monitor logic is "A <u>or</u> B AND C <u>or</u> D").
	D	Plausible because CREV has NOT started due to Rad Monitor logic, it has started due to LOW FLOW condition.

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

Question 38 Info																															
Question Type:	Multiple Choice																														
Status:	Active																														
Always select on test?	No																														
Authorized for practice?	No																														
Points:	1.00																														
Time to Complete:	4																														
Difficulty:	2.00																														
System ID:	994800																														
User-Defined ID:	B NRC 2019																														
Cross Reference Number:	272000 K4.03																														
Topic:	ILT-5040D-5A-003 Both units are operating at 100% power with the following conditions present:																														
Num Field 1:																															
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REQUIRED MATERIALS:	None																														
Notes and Comments:																															

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

39

ID: 2084455

Points: 1.00

A transient has occurred on Unit 2.

The following conditions exist:

- Condenser Vacuum 4 inches Hg
- Reactor Power 0%
- Reactor Pressure 1050 psig and rising slowly
- Reactor Level -10 inches and dropping slowly

Based on the above conditions use ____ (1) ____ for RPV level control AND ____ (2) ____ for RPV pressure control.

- A. (1) RCIC
(2) HPCI
- B. (1) RCIC
(2) Bypass valves
- C. (1) Feed water
(2) HPCI
- D. (1) Feed water
(2) Bypass valves

Answer: A

Answer Explanation

Choice		Basis or Justification
Correct:	A	OP-PB-101-111-1001 directs the use of RCIC for RPV level control and HPCI for pressure control with a group I isolation. The conditions presented above will require the crew to close the MSIVs.
Distractors:	B	Plausible if the candidate doesn't recall that the bypass valves will not be available below 7 inches.
	C	Plausible if the candidate believes that the feedpumps can be used at low vacuum since the low vacuum trip has been removed. They should have been manually tripped IAW arc actions.
	D	Plausible if the candidate believes that the feedpumps can be used at low vacuum since the low vacuum trip has been removed. Plausible if the candidate doesn't recall that the bypass valves will not be available below 7 inches.

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

Question 39 Info																																															
Question Type:	Multiple Choice																																														
Status:	Active																																														
Always select on test?	No																																														
Authorized for practice?	No																																														
Points:	1.00																																														
Time to Complete:	0																																														
Difficulty:	1.00																																														
System ID:	2084455																																														
User-Defined ID:	B NRC 2019																																														
Cross Reference Number:	295006K101																																														
Topic:	ILT- 2100 3-013 Describe the symptom-based TRIP mitigation strategies.																																														
Num Field 1:																																															
Num Field 2:																																															
Text Field:																																															
Comments:	<table border="1"> <thead> <tr> <th colspan="4">Psychometrics</th> </tr> <tr> <th>Level of Knowledge</th> <th>Difficulty</th> <th>Time Allowance (minutes)</th> <th>RO</th> </tr> </thead> <tbody> <tr> <td>High</td> <td></td> <td></td> <td>10CRF55.41(b) 10</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th colspan="4">Source Documentation</th> </tr> </thead> <tbody> <tr> <td>Source:</td> <td colspan="3"> <input checked="" type="checkbox"/> New Exam item Previous NRC Exam <input type="checkbox"/> Modified Bank Other Exam Bank <input type="checkbox"/> ILT Exam Bank </td> </tr> <tr> <td>Reference(s):</td> <td colspan="3">OP-PB-101-111-1001</td> </tr> <tr> <td>Learning Objective:</td> <td colspan="3">PLOT - 2100-3</td> </tr> <tr> <td>K/A System:</td> <td>295006 - SCRAM</td> <td>Importance;</td> <td>RO / SRO 3.7</td> </tr> <tr> <td>K/A Statement:</td> <td colspan="3">K101 - Knowledge of the operational implications of the following concepts as they apply to SCRAM: Decay heat generation and removal</td> </tr> <tr> <td>REQUIRED MATERIALS:</td> <td colspan="3">None</td> </tr> <tr> <td>Notes and Comments:</td> <td colspan="3"> This matches the K/A as knowledge that the loss of the condenser must be used to conclude that only HPCI and RCIC can be used for decay heat removal. The 10CFR reference (10CRF55.41(b) 10) is correct because there is an administrative procedure (OP-PB-101-111-1001) that discusses lineups for different plant conditions. </td> </tr> </tbody> </table>			Psychometrics				Level of Knowledge	Difficulty	Time Allowance (minutes)	RO	High			10CRF55.41(b) 10	Source Documentation				Source:	<input checked="" type="checkbox"/> New Exam item Previous NRC Exam <input type="checkbox"/> Modified Bank Other Exam Bank <input type="checkbox"/> ILT Exam Bank			Reference(s):	OP-PB-101-111-1001			Learning Objective:	PLOT - 2100-3			K/A System:	295006 - SCRAM	Importance;	RO / SRO 3.7	K/A Statement:	K101 - Knowledge of the operational implications of the following concepts as they apply to SCRAM: Decay heat generation and removal			REQUIRED MATERIALS:	None			Notes and Comments:	This matches the K/A as knowledge that the loss of the condenser must be used to conclude that only HPCI and RCIC can be used for decay heat removal. The 10CFR reference (10CRF55.41(b) 10) is correct because there is an administrative procedure (OP-PB-101-111-1001) that discusses lineups for different plant conditions.		
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EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

40

ID: 2084067

Points: 1.00

PBAPS Unit 3 plant conditions are as follows:

- Mode 5.
- Core Shuffle II is in progress, loading fuel into the core.

Which one of the following statements would be considered inadvertent criticality and require entry into ON-124 "Fuel Floor and Fuel Handling Problems?"

While loading the 1st fuel assembly ____ (1) ____ to a WRNM, the WRNM count rate ____ (2) ____ between CCTAS steps.

- A. (1) adjacent
(2) doubles
- B. (1) NOT adjacent
(2) doubles
- C. (1) adjacent
(2) doubles two times
- D. (1) NOT adjacent
(2) doubles two times

Answer: D

Answer Explanation		
Choice		Basis or Justification
Correct:	D	ON-124 has a note stating that step 1.1 is NOT applicable when loading the 1st, 2nd, 3rd, or 4th fuel assembly ADJACENT to a WRNM. step 1.1 is an entry for ON-124 when WRNM count rate doubles two times between CCTAS steps. Since this assembly is NOT adjacent to a WRNM, step 1.1 applies and ON-124 should be entered
Distractors:	A	Plausible if candidate misapplies the note in ON-124 and believes step 1.1 applies when fuel assembly is adjacent to WRNM. Also candidate may misapply step 1.1.
	B	Plausible if candidate misapplies step 1.1 and believes only doubling WRNM count rate will require entry into ON-124
	C	Plausible if candidate misapplies the note in ON-124 and believes step 1.1 applies when fuel assembly is adjacent to WRNM.

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

Question 40 Info																																	
Question Type:	Multiple Choice																																
Status:	Active																																
Always select on test?	No																																
Authorized for practice?	No																																
Points:	1.00																																
Time to Complete:	1																																
Difficulty:	1.00																																
System ID:	2084067																																
User-Defined ID:	B NRC 2019																																
Cross Reference Number:	295023 AK1.03																																
Topic:	ILT 5018-4-002 Indications of Criticality																																
Num Field 1:																																	
Num Field 2:																																	
Text Field:																																	
Comments:	<table border="1"> <thead> <tr> <th colspan="4">Psychometrics</th> </tr> <tr> <th>Level of Knowledge</th> <th>Difficulty</th> <th>Time Allowance (minutes)</th> <th>RO</th> </tr> </thead> <tbody> <tr> <td>Memory</td> <td>2</td> <td>3</td> <td>10CRF55.41(b)(1)</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th colspan="2">Source Documentation</th> </tr> </thead> <tbody> <tr> <td>Source:</td> <td> <input type="checkbox"/> New Exam Item <input type="checkbox"/> Modified Bank Item <input checked="" type="checkbox"/> ILT Exam Bank </td> </tr> <tr> <td>Reference(s):</td> <td>ON-124</td> </tr> <tr> <td>Learning Objective:</td> <td>PLOT-5018-4</td> </tr> <tr> <td>K/A System:</td> <td>295023 - Refueling Accidents</td> </tr> <tr> <td>Importance:</td> <td>RO / SRO 3.7 / 4.0</td> </tr> <tr> <td colspan="2">K/A Statement: AK1.03 - Knowledge of the operational implications of the following concepts as they apply to REFUELING ACCIDENTS : Inadvertent criticality</td> </tr> <tr> <td>REQUIRED MATERIALS:</td> <td>NONE</td> </tr> <tr> <td>Notes and Comments:</td> <td></td> </tr> </tbody> </table>			Psychometrics				Level of Knowledge	Difficulty	Time Allowance (minutes)	RO	Memory	2	3	10CRF55.41(b)(1)	Source Documentation		Source:	<input type="checkbox"/> New Exam Item <input type="checkbox"/> Modified Bank Item <input checked="" type="checkbox"/> ILT Exam Bank	Reference(s):	ON-124	Learning Objective:	PLOT-5018-4	K/A System:	295023 - Refueling Accidents	Importance:	RO / SRO 3.7 / 4.0	K/A Statement: AK1.03 - Knowledge of the operational implications of the following concepts as they apply to REFUELING ACCIDENTS : Inadvertent criticality		REQUIRED MATERIALS:	NONE	Notes and Comments:	
Psychometrics																																	
Level of Knowledge	Difficulty	Time Allowance (minutes)	RO																														
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REQUIRED MATERIALS:	NONE																																
Notes and Comments:																																	

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

41

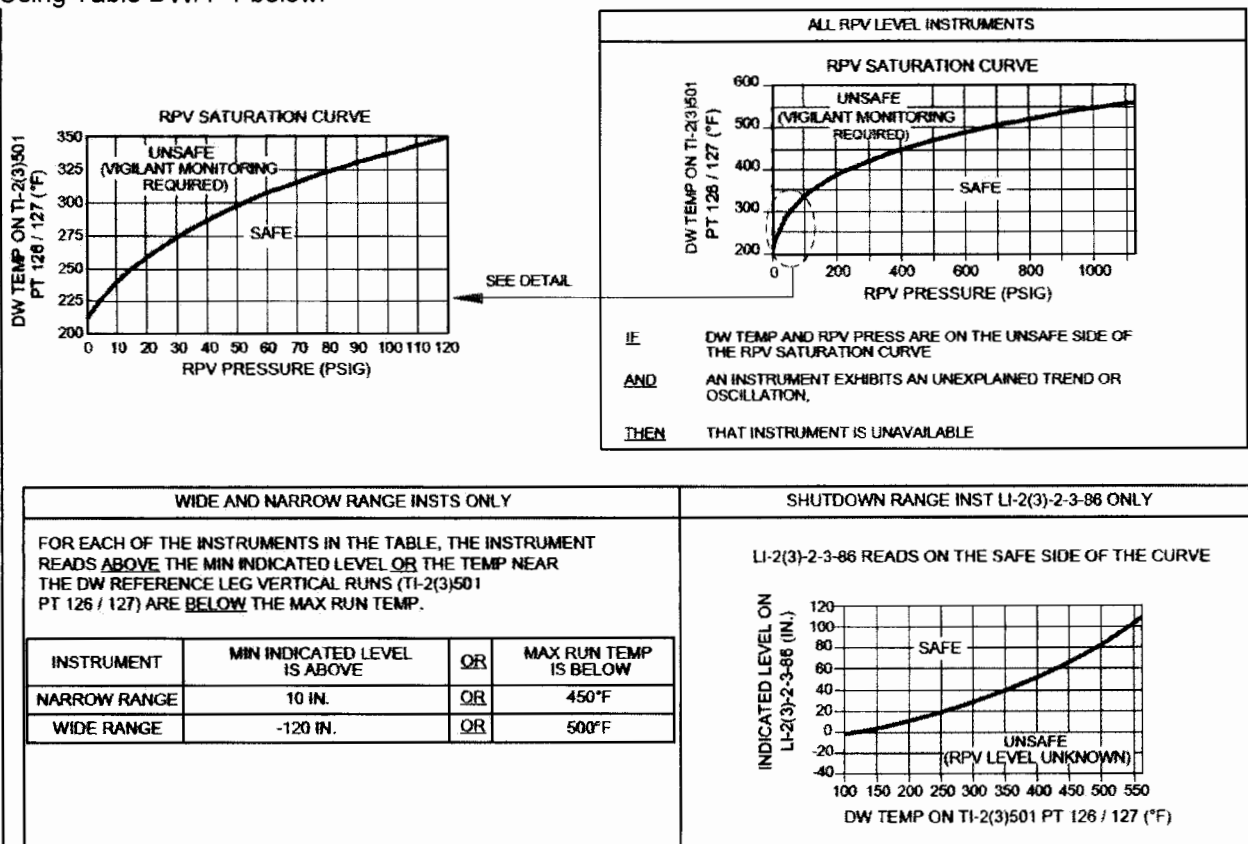
ID: 993747

Points: 1.00

During a transient on Unit 2, the following plant conditions exist:

- All control rods fully inserted.
- RPV pressure 900 psig and stable.
- Drywell Air Temperature TI-2501 PT 126 indicates 510 °F.
- Drywell Air Temperature TI-2501 PT 127 indicates 510 °F.
- Narrow Range RPV level indicates +8 inches.
- Wide Range RPV level (LI-2-02-3-085A) indicates -125 inches.
- Wide Range RPV level (LI-2-02-3-085B) indicates -115 inches.
- Refuel Range RPV level (LI-2-2-3-086) indicates +60 inches.

Using Table DW/T-1 below:



Which of the RPV level indicator(s) listed below is (are) available to trend RPV level per the TRIPs?

- Narrow Range only.
- Wide Range RPV level (LI-2-02-3-085B) only.
- Narrow Range and Wide Range RPV level (LI-2-02-3-085B) only.
- Wide Range RPV level (LI-2-02-3-085A) and Refuel Range RPV level (LI-2-2-3-086) only.

Answer: B

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

Answer Explanation

Choice		Basis or Justification
Correct:	B	Wide range RPV level LI-2-02-3-085B has its Min indicated level above -120 inches and could therefore be used as a valid indication even though Max run temperature is above 500°F.
Distractors:	A	Narrow range indication is below its Min indicating level at 8 inches, and since it is also above the Max run temperature of 450°F Plausible if candidate misapplies Table DW/T-1
	C	Narrow range indication is below its Min indicating level at 8 inches, and since it is also above the Max run temperature of 450°F Plausible if candidate misapplies Table DW/T-1
	D	Wide range RPV level LI-2-02-3-085A is below its Min Indicating level at -125 inches and is also above Max run temperature of 500°F therefore it cannot be used. Plausible if candidate misapplies Table DW/T-1

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

Question 41 Info																																							
Question Type:	Multiple Choice																																						
Status:	Active																																						
Always select on test?	No																																						
Authorized for practice?	No																																						
Points:	1.00																																						
Time to Complete:	2																																						
Difficulty:	2.00																																						
System ID:	993747																																						
User-Defined ID:	B NRC 2019																																						
Cross Reference Number:	295028 EK1.01																																						
Topic:	ILT-PBIG2102-002 Valid Level Instruments																																						
Num Field 1:																																							
Num Field 2:																																							
Text Field:																																							
Comments:	<table border="1"> <thead> <tr> <th colspan="4">Psychometrics</th> </tr> <tr> <th>Level of Knowledge</th> <th>Difficulty</th> <th>Time Allowance (minutes)</th> <th>RO</th> </tr> </thead> <tbody> <tr> <td>High</td> <td>2</td> <td>3</td> <td>10CRF55.41(b)(10)</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th colspan="3">Source Documentation</th> </tr> </thead> <tbody> <tr> <td>Source:</td> <td colspan="2"> <input type="checkbox"/> New Exam Item <input type="checkbox"/> Modified Bank Item <input checked="" type="checkbox"/> ILT Exam Bank </td> </tr> <tr> <td>Reference(s):</td> <td colspan="2">T-102, T-103 and BASES</td> </tr> <tr> <td>Learning Objective:</td> <td colspan="2">PBIG2102-002</td> </tr> <tr> <td>K/A System:</td> <td>295028 - High Drywell Temperature</td> <td>Importance: RO / SRO 3.5 / 3.7</td> </tr> <tr> <td colspan="3">K/A Statement: EK1.01 - Knowledge of the operational implications of the following concepts as they apply to HIGH DRYWELL TEMPERATURE : Reactor water level measurement</td> </tr> <tr> <td>REQUIRED MATERIALS:</td> <td colspan="2">NONE</td> </tr> <tr> <td>Notes and Comments:</td> <td colspan="2">Graphs are embedded as they are needed to verify what instruments can be used during high drywell temperature situations. The implications being erroneous level being used for TRIP adherence.</td> </tr> </tbody> </table>			Psychometrics				Level of Knowledge	Difficulty	Time Allowance (minutes)	RO	High	2	3	10CRF55.41(b)(10)	Source Documentation			Source:	<input type="checkbox"/> New Exam Item <input type="checkbox"/> Modified Bank Item <input checked="" type="checkbox"/> ILT Exam Bank		Reference(s):	T-102, T-103 and BASES		Learning Objective:	PBIG2102-002		K/A System:	295028 - High Drywell Temperature	Importance: RO / SRO 3.5 / 3.7	K/A Statement: EK1.01 - Knowledge of the operational implications of the following concepts as they apply to HIGH DRYWELL TEMPERATURE : Reactor water level measurement			REQUIRED MATERIALS:	NONE		Notes and Comments:	Graphs are embedded as they are needed to verify what instruments can be used during high drywell temperature situations. The implications being erroneous level being used for TRIP adherence.	
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Level of Knowledge	Difficulty	Time Allowance (minutes)	RO																																				
High	2	3	10CRF55.41(b)(10)																																				
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REQUIRED MATERIALS:	NONE																																						
Notes and Comments:	Graphs are embedded as they are needed to verify what instruments can be used during high drywell temperature situations. The implications being erroneous level being used for TRIP adherence.																																						

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

42

ID: 2084225

Points: 1.00

Unit 2 is at 100% power

- Loss of off-site power occurs
- A hydraulic ATWS occurs

30 seconds later

- 2 SRVs indicate open
- RPV Pressure is steady

Reactor power is currently approximately (1) and the (2) system is capable of maintaining RPV level above top of active fuel.

- A. (1) 3%
(2) HPCI or RCIC
- B. (1) 6%
(2) HPCI or RCIC
- C. (1) 3%
(2) HPCI only
- D. (1) 6%
(2) HPCI only

Answer: D

Answer Explanation

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

Choice		Basis or Justification
Correct:	D	Due to a Loss of off-site power a group I isolation has occurred. This regulates pressure control to the SRVs which will open on pressure setpoint. 2 SRVs open indicate that power is above decay heat generation and power is > 5% power. This is beyond the capacity of RCIC to make up so HPCI must be used to maintain reactor level.
Distractors:	A	This is plausible if the candidate confuses the related power level to SRVs with Bypass valves which pass approximately 2.5% power per bypass valve. Plausible as RCIC is designed to maintain Reactor Power level during a group I isolation event alone. However a normal group I isolation event with no other problems would produce only Decay Heat generation and only 1 SRV would open. 2 SRVs being open indicate that there is more power being generated than simply Decay Heat and RCIC cannot maintain level
	B	This is the correct power level Plausible as RCIC is designed to maintain Reactor Power level during a group I isolation event alone. However a normal group I isolation event with no other problems would produce only Decay Heat generation and only 1 SRV would open. 2 SRVs being open indicate that there is more power being generated than simply Decay Heat and RCIC cannot maintain level
	C	This is plausible if the candidate confuses the related power level to SRVs with Bypass valves which pass approximately 2.5% power per bypass valve. HPCI is the correct system and would be able to handle this power level.

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

Question 42 Info			
Question Type:	Multiple Choice		
Status:	Active		
Always select on test?	No		
Authorized for practice?	No		
Points:	1.00		
Time to Complete:	0		
Difficulty:	0.00		
System ID:	2084225		
User-Defined ID:	B NRC 2019		
Cross Reference Number:	295025 K2.09		
Topic:	ILT-5001A-5n relationship # SRV's to power		
Num Field 1:			
Num Field 2:			
Text Field:			
Comments:			

Psychometrics			
Level of Knowledge	Difficulty	Time Allowance (minutes)	RO
High	2	3	10CRF55.41(b)(5)

Source Documentation		
Source:	<input checked="" type="checkbox"/> New Exam Item <input type="checkbox"/> Modified Bank Item <input type="checkbox"/> ILT Exam Bank	
Reference(s):	UFSAR 4.4, 4.7, 6.3	
Learning Objective:	PLOT-5001A-5	
K/A System:	295025 - High Reactor Pressure	Importance: RO / SRO 3.9 / 3.9
K/A Statement:		
EK2.09 - Knowledge of the interrelations between HIGH REACTOR PRESSURE and the following: Reactor power		
REQUIRED MATERIALS:	NONE	
Notes and Comments:		

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

43

ID: 994386

Points: 1.00

Unit 2 is operating at 85% power with the following conditions:

- Battery charger 2BD003-1 is supplying the Division II 250 VDC bus

A design basis LOCA occurs.

- The output breaker on battery charger 2BD003-1 trips open at the time of the LOCA

Assuming no operator action has been taken, how will the plant respond to this event during the first hour?

The Division II 250 VDC bus is powered at:

- A. rated voltage supplied by battery charger 2BD003-2 automatically.
- B. degraded voltage until battery charger 2BD003-2 is placed in service manually.
- C. rated voltage supplied by the 2B station battery AND the in-service 2D charger.
- D. degraded voltage supplied by the 2B station battery AND the in-service 2D charger

Answer: C

Answer Explanation		
Choice		Basis or Justification
Correct:	C	Correct - when the output breaker for charger 2BD003-1 trips, the charger no longer supplies power to the Division II 250 VDC bus. The bus loads would then be supplied by the 2B and 2D batteries. The batteries are designed to supply loads during a DBA for 2 hours.
Distractors:	A	Plausible as charger 2BD003-2 is the backup charger, however it must be manually placed in service...only one charger can be in service at a time. The question stem states "assuming no operator actions."
	B	Plausible as placing the backup charger in service will supply the 250 VDC bus from the charger again, however the battery will fully support all loads for approximately 2 hours with no battery charger; the bus will remain at rated voltage.
	D	Plausible as the 2B station battery and the in-service 2D charger would supply the 250 VDC bus, however it would be supplied at rated voltage and not start to degrade until approximately 2 hours later.

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

Question 43 Info																																	
Question Type:	Multiple Choice																																
Status:	Active																																
Always select on test?	No																																
Authorized for practice?	No																																
Points:	1.00																																
Time to Complete:	2																																
Difficulty:	3.00																																
System ID:	994386																																
User-Defined ID:	B NRC 2019																																
Cross Reference Number:	295004 AK2.01																																
Topic:	ILT-5057-3C-002 Effect of a charger malfunction on DC battery																																
Num Field 1:																																	
Num Field 2:																																	
Text Field:																																	
Comments:	<table border="1"> <thead> <tr> <th colspan="4">Psychometrics</th> </tr> <tr> <th>Level of Knowledge</th> <th>Difficulty</th> <th>Time Allowance (minutes)</th> <th>RO</th> </tr> </thead> <tbody> <tr> <td>High</td> <td>2</td> <td>3</td> <td>10CRF55.41(b)(8)</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th colspan="2">Source Documentation</th> </tr> </thead> <tbody> <tr> <td>Source:</td> <td> <input type="checkbox"/> New Exam Item <input type="checkbox"/> Modified Bank Item <input checked="" type="checkbox"/> ILT Exam Bank </td> </tr> <tr> <td>Reference(s):</td> <td>SE-11 BASES, UFSAR 8.7</td> </tr> <tr> <td>Learning Objective:</td> <td>PLOT-5057-3</td> </tr> <tr> <td>K/A System:</td> <td>295004 - Partial or Complete Loss of D.C. Power</td> </tr> <tr> <td>Importance:</td> <td>RO / SRO 3.1 / 3.1</td> </tr> <tr> <td colspan="2">K/A Statement: AK2.01 - Knowledge of the interrelations between PARTIAL OR COMPLETE LOSS OF D.C. POWER and the following: Battery charger</td> </tr> <tr> <td>REQUIRED MATERIALS:</td> <td>NONE</td> </tr> <tr> <td>Notes and Comments:</td> <td></td> </tr> </tbody> </table>			Psychometrics				Level of Knowledge	Difficulty	Time Allowance (minutes)	RO	High	2	3	10CRF55.41(b)(8)	Source Documentation		Source:	<input type="checkbox"/> New Exam Item <input type="checkbox"/> Modified Bank Item <input checked="" type="checkbox"/> ILT Exam Bank	Reference(s):	SE-11 BASES, UFSAR 8.7	Learning Objective:	PLOT-5057-3	K/A System:	295004 - Partial or Complete Loss of D.C. Power	Importance:	RO / SRO 3.1 / 3.1	K/A Statement: AK2.01 - Knowledge of the interrelations between PARTIAL OR COMPLETE LOSS OF D.C. POWER and the following: Battery charger		REQUIRED MATERIALS:	NONE	Notes and Comments:	
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REQUIRED MATERIALS:	NONE																																
Notes and Comments:																																	

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

44

ID: 2084249

Points: 1.00

Unit 2 is at 100% power

- The #1 breaker is closed on the #1 Aux Bus
- The #22 breaker is closed on the #2 Aux Bus

Subsequently:

- Main Generator voltage begins to lower

Choose the expected response of the following condensate pump ammeters.

'A' condensate pump ammeter will ____ (1) ____

'B' condensate pump ammeter will ____ (2) ____

- A. (1) Rise
(2) Remain the same
- B. (1) Rise
(2) Rise
- C. (1) Remain the same
(2) Remain the same
- D. (1) Remain the same
(2) Rise

Answer: A

Answer Explanation		
Choice		Basis or Justification
Correct:	A	The 'A' condensate pump is currently powered from the generator as the #1 breaker is closed powering the #1 Aux bus. As voltage lowers the 'A' condensate will draw more amperage to maintain pump speed. Since the 'B' pump is powered from offsite as indicated by the #22 breaker being closed, it's voltage and therefore amperage will remain the same.
Distractor s:	B	Plausible if candidate does not recall that the A and B condensate pumps are powered off of the 2 different aux busses.
	C	Plausible if candidate does not understand the effects of a lowering voltage on a motor.
	D	Plausible if candidate confuses which condensate pump is powered from which aux bus.

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

Question 44 Info																																															
Question Type:	Multiple Choice																																														
Status:	Active																																														
Always select on test?	No																																														
Authorized for practice?	No																																														
Points:	1.00																																														
Time to Complete:	3																																														
Difficulty:	2.00																																														
System ID:	2084249																																														
User-Defined ID:	B NRC 2019																																														
Cross Reference Number:	700000 AK2.01																																														
Topic:	ILT-5053-7 voltage effects on motors																																														
Num Field 1:																																															
Num Field 2:																																															
Text Field:																																															
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REQUIRED MATERIALS:	None																																														
Notes and Comments:	None																																														

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

45

ID: 2084285

Points: 1.00

Unit 2 is at 100% power

- #2 Aux bus de-energizes

As a result of #2 bus deenergizing, Drywell Cooling is automatically maximized by isolation of cooling to:

- A. Recirc Pump Seals
- B. Recirc Pump Motor
- C. Drywell Equipment sump
- D. RWCU Non-Regen Heat Exchanger

Answer: D

Answer Explanation		
Choice		Basis or Justification
Correct:	D	Due to a loss of the #2 aux bus, 2 DWCW load centers will de-energize. This causes RBCCW to back up DWCW. During this swap over RBCCW will isolate RWCU non-regen HX in order to maximize DWCW.
Distractor s:	A	Plausible as this is a load cooled by RBCCW, however it does not isolate when RBCCW backs up DWCW
	B	Plausible as this is a load cooled by DWCW, however it is not isolated when RBCCW backs up DWCW
	C	Plausible as this is a load cooled by DWCW, however it is not isolated when RBCCW backs up DWCW

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

Question 45 Info																															
Question Type:	Multiple Choice																														
Status:	Active																														
Always select on test?	No																														
Authorized for practice?	No																														
Points:	1.00																														
Time to Complete:	0																														
Difficulty:	0.00																														
System ID:	2084285																														
User-Defined ID:	B NRC 2019																														
Cross Reference Number:	295018 AK3.01																														
Topic:	ILT-5035-3c reason RBCCW backs up DWCW																														
Num Field 1:																															
Num Field 2:																															
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REQUIRED MATERIALS:	None																														
Notes and Comments:	None																														

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

46

ID: 994775

Points: 1.00

The following conditions exist on Unit 3:

- ATWS
- Group I isolation
- Reactor power is 40%
- Torus Cooling is NOT available

Which one of the following limits will be challenged first by these conditions?

- A. Drywell Spray Initiation Limit
- B. Heat Capacity Temperature Limit
- C. Pressure Suppression Pressure Limit
- D. Primary Containment Pressure Limit

Answer: B

Answer Explanation		
Correct:	B	The given conditions indicate SRV discharge into the Torus. Without torus cooling, HCTL will be challenged first.
Distractors:	A	Plausible if the candidate applies the requirements of DWSIL. There will be an entry condition into T-102, "Primary Containment Control" due to the SRV's discharging to the Torus without cooling, however DWSIL is not an initial concern because there are no given conditions of Primary Containment high pressure or temperature.
	B	Plausible as PSP would be a concern while in T-102, however the PSP is not an initial concern since there are no given conditions that indicate the Primary Containment is not functioning properly.
	D	Plausible as PCP would be a concern while in T-102, however the PCP limit is not an initial concern because there is no given condition of Primary Containment high pressure.

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

Question 46 Info																															
Question Type:	Multiple Choice																														
Status:	Active																														
Always select on test?	No																														
Authorized for practice?	No																														
Points:	1.00																														
Time to Complete:	3																														
Difficulty:	2.00																														
System ID:	994775																														
User-Defined ID:	B NRC 2019																														
Cross Reference Number:	295026 EK3.02																														
Topic:	ILT-2102-7A-026 The following conditions exist on Unit 3: *ATWS *Group I Isolation *Reactor power																														
Num Field 1:																															
Num Field 2:																															
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Comments:	<table border="1"> <thead> <tr> <th colspan="4">Psychometrics</th> </tr> <tr> <th>Level of Knowledge</th> <th>Difficulty</th> <th>Time Allowance (minutes)</th> <th>RO</th> </tr> </thead> <tbody> <tr> <td>High</td> <td></td> <td></td> <td>10CRF55.41(b)(5)</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th colspan="2">Source Documentation</th> </tr> </thead> <tbody> <tr> <td>Source:</td> <td> <div> <div>New Exam item</div> <div>Modified Bank</div> <div><input checked="" type="checkbox"/> ILT Exam Bank</div> </div> <div> <div>Previous NRC Exam</div> <div>Other Exam Bank</div> </div> </td> </tr> <tr> <td>Reference(s):</td> <td>T-102 and Bases</td> </tr> <tr> <td>Learning Objective:</td> <td>PBIG-2102-7</td> </tr> <tr> <td>K/A System:</td> <td> <div>295026 - Suppression Pool High Water Temperature</div> <div>Importance: RO / SRO 3.9/ 4.0</div> </td> </tr> <tr> <td>K/A Statement:</td> <td>EK3.02 - Knowledge of the reasons for the following responses as they apply to SUPPRESSION POOL HIGH WATER TEMPERATURE: Suppression pool cooling</td> </tr> <tr> <td>REQUIRED MATERIALS:</td> <td>None</td> </tr> <tr> <td>Notes and Comments:</td> <td>This question meets the K/A because T-102 directs placing torus cooling in service to mitigate the consequences of rising suppression pool temperature due to SRVs open in an ATWS. This Question tests the understanding of the relationship between suppression pool temp and cooling by establishing a situation where the loss of SP cooling and resulting rise in SP Temp results in a challenge to HTCL</td> </tr> </tbody> </table>			Psychometrics				Level of Knowledge	Difficulty	Time Allowance (minutes)	RO	High			10CRF55.41(b)(5)	Source Documentation		Source:	<div> <div>New Exam item</div> <div>Modified Bank</div> <div><input checked="" type="checkbox"/> ILT Exam Bank</div> </div> <div> <div>Previous NRC Exam</div> <div>Other Exam Bank</div> </div>	Reference(s):	T-102 and Bases	Learning Objective:	PBIG-2102-7	K/A System:	<div>295026 - Suppression Pool High Water Temperature</div> <div>Importance: RO / SRO 3.9/ 4.0</div>	K/A Statement:	EK3.02 - Knowledge of the reasons for the following responses as they apply to SUPPRESSION POOL HIGH WATER TEMPERATURE: Suppression pool cooling	REQUIRED MATERIALS:	None	Notes and Comments:	This question meets the K/A because T-102 directs placing torus cooling in service to mitigate the consequences of rising suppression pool temperature due to SRVs open in an ATWS. This Question tests the understanding of the relationship between suppression pool temp and cooling by establishing a situation where the loss of SP cooling and resulting rise in SP Temp results in a challenge to HTCL
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EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

47

ID: 2084302

Points: 1.00

Unit 2 is experiencing an ATWS:

- ARI was attempted unsuccessfully
- Reactor Power is currently 15% power

Which of the following is performed first by the Unit Reactor Operator in accordance with T-101 "RPV Control", and what is the reason?

- A. Inject SBLC before torus temp reaches 110°F to limit the Torus temperature rise
- B. Inhibit ADS to prevent injection of large volumes of relatively cold, unborated water
- C. Drive rods with T-220 "Driving Control Rods During Failure to Scram" to exit ATWS
- D. Trip Recirc pumps at least 10 seconds apart to effect a prompt reduction in core circulation and reactor power

Answer: D

Answer Explanation		
Choice		Basis or Justification
Correct:	D	Tripping the recirc pumps 10 seconds apart is one of the first steps when responding to an ATWS above 4% power IAW T-101.
Distractor s:	A	Plausible as injecting SBLC before torus temp reaches 110°F is an ATWS strategy, but since power is greater than 4% tripping the recirc pumps would be performed first IAW T-101.
	B	Plausible as inhibiting ADS is part of the ATWS strategy, but since power is greater than 4% tripping the recirc pumps would be performed first IAW T-101.
	C	Plausible as driving rods is part of the ATWS strategy, but since power is greater than 4% tripping the recirc pumps would be performed first IAW T-101.

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

Question 47 Info																																							
Question Type:	Multiple Choice																																						
Status:	Active																																						
Always select on test?	No																																						
Authorized for practice?	No																																						
Points:	1.00																																						
Time to Complete:	0																																						
Difficulty:	0.00																																						
System ID:	2084302																																						
User-Defined ID:	B NRC 2019																																						
Cross Reference Number:	295037 EK3.01																																						
Topic:	ILT-PBIG2101-006 Reason to trip recirc pumps during ATWS																																						
Num Field 1:																																							
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REQUIRED MATERIALS:	None																																						
Notes and Comments:	None																																						

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

48

ID: 2084800

Points: 1.00

The following plant conditions exist on Unit 2:

- Reactor is shutdown with all rods inserted
- RPV level -159 inches and slowly lowering
- RPV pressure 105 psig and lowering
- Condensate pump "A" is injecting
- RHR A and B loop injection valves will not open locally or remotely
- CS Loop "A" was blocked for maintenance. CS "B & D" pumps tripped on overcurrent
- HPCI is tripped due to a lube oil problem
- RCIC is tripped on overspeed and cannot be reset

Which one of the following Alternate Subsystems meets the criteria to successfully inject into the RPV under these conditions?

- A. HPSW via RHR per T-245-2, "HPSW Injection into the RPV".
- B. Fire System via RHR per T-243-2, "Fire System Injection into the RPV".
- C. Refuel Water Transfer via Condensate per T-242-2, "Alternate Injection using the Refuel Water Transfer System".
- D. Condensate Transfer via CS loop "B" per T-241-2, "Alternate Injection using the Condensate Transfer System".

Answer: D

Answer Explanation		
Choice		Basis or Justification
Correct:	D	Under the stated conditions the only alternate subsystem available to inject would be Condensate transfer per T-241-2
Distractor s:	A	RHR Injection valves are required in order to use this path. Plausible if candidate misinterprets conditions as this is a valid subsystem. However both RHR A and B loop injection valves will not open as stated in stem.
	B	RHR Injection valves are required in order to use this path. Plausible if candidate misinterprets conditions as this is a valid subsystem. However both RHR A and B loop injection valves will not open as stated in stem.
	C	T-242-2 pre-req requires condensate pumps be shutdown. Plausible if candidate misinterprets conditions as this is a valid subsystem. However a condensate pump is currently running and injecting as stated in the stem.

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

Question 48 Info																															
Question Type:	Multiple Choice																														
Status:	Active																														
Always select on test?	No																														
Authorized for practice?	No																														
Points:	1.00																														
Time to Complete:	0																														
Difficulty:	0.00																														
System ID:	2084800																														
User-Defined ID:	B NRC 2019																														
Cross Reference Number:	295031EA1.08																														
Topic:	ILT-2101-3-003 Alternate subsystem use																														
Num Field 1:																															
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REQUIRED MATERIALS:	None																														
Notes and Comments:	None																														

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

49

ID: 993425

Points: 1.00

Unit 2 is operating at full power with all Instrument Air and Instrument Nitrogen systems aligned normally when it experiences the following:

- Annunciator NITROGEN COMPRESSOR A OR B TROUBLE (228 E-2) alarms.

After investigation, the EO reports:

- The 'A' and 'B' Instrument Nitrogen Compressors are tripped.
- The 'A' and 'B' Instrument Nitrogen Receiver pressures are at 80 psig.

With no operator action, with the 'A' and 'B' Instrument Nitrogen Receiver pressures at 80 psig, pressure will AUTOMATICALLY be maintained to the 'A' and 'B' Instrument Nitrogen Headers by the:

- A. Nitrogen Bottles aligned by the auto opening of SV-8130 A/B, "A/B Supply."
- B. Containment Atmosphere Dilution System aligned by the auto opening of PCV-7651 A/B, "SGIG Pressure Control Valve."
- C. Truck Connection aligned by the auto opening of PCV-8917 A/B, "A/B Nitrogen Pressure Control Valve for Backup Supply."
- D. Instrument Air System aligned by the auto opening of AO-4230 A/B, "A/B Instrument Air Backup to Instrument Nitrogen."

Answer: D

Answer Explanation		
Choice		Basis or Justification
Correct:	D	Instrument air will automatically backup the Instrument Nitrogen System when Instrument Nitrogen Receiver pressure drops below 85 psig.
Distractor s:	A	Plausible as the Nitrogen Bottles are a back-up supply to some components using Instrument Nitrogen. The SV-8130 valves have an open/auto position, however they are normally in the closed position. If left in auto/open, the valves would be open, however they would only be aligned to the ADS valves.
	B	Plausible as the CAD system is aligned normally to the SGIG system through these valves. In order to supply the Instrument Nitrogen system headers with CAD, manual valve alignments are required.
	C	Plausible as the truck connection is also available to be used, but is not aligned for automatic operation. Once aligned pressure would only be supplied to the ADS valves.

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

Question 49 Info																																							
Question Type:	Multiple Choice																																						
Status:	Active																																						
Always select on test?	No																																						
Authorized for practice?	No																																						
Points:	1.00																																						
Time to Complete:	3																																						
Difficulty:	2.00																																						
System ID:	993425																																						
User-Defined ID:	B NRC 2019																																						
Cross Reference Number:	295019 AA1.02																																						
Topic:	ILT-5016-4-001 Relationship between Inst N2 and Inst Air																																						
Num Field 1:																																							
Num Field 2:																																							
Text Field:																																							
Comments:	<table border="1"> <thead> <tr> <th colspan="4">Psychometrics</th> </tr> <tr> <th>Level of Knowledge</th> <th>Difficulty</th> <th>Time Allowance (minutes)</th> <th>RO</th> </tr> </thead> <tbody> <tr> <td>High</td> <td></td> <td></td> <td>10CRF55.41(b)(10)</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th colspan="3">Source Documentation</th> </tr> </thead> <tbody> <tr> <td>Source:</td> <td colspan="2"> <input type="checkbox"/> New Exam item <input type="checkbox"/> Previous NRC Exam <input type="checkbox"/> Modified Bank <input type="checkbox"/> Other Exam Bank <input checked="" type="checkbox"/> X ILT Exam Bank </td> </tr> <tr> <td>Reference(s):</td> <td colspan="2">PLOT 5016; ARC 228 E-2</td> </tr> <tr> <td>Learning Objective:</td> <td colspan="2">PLOT-5016-4</td> </tr> <tr> <td>K/A System:</td> <td>295019 - Partial or Complete Loss of Instrument Air</td> <td>Importance: RO / SRO 3.3 / 3.1</td> </tr> <tr> <td>K/A Statement:</td> <td colspan="2"> AA1.02 - Ability to operate and/or monitor the following as they apply to PARTIAL OR COMPLETE LOSS OF INSTRUMENT AIR : Instrument air system valves </td> </tr> <tr> <td>REQUIRED MATERIALS:</td> <td colspan="2">None</td> </tr> <tr> <td>Notes and Comments:</td> <td colspan="2">None</td> </tr> </tbody> </table>			Psychometrics				Level of Knowledge	Difficulty	Time Allowance (minutes)	RO	High			10CRF55.41(b)(10)	Source Documentation			Source:	<input type="checkbox"/> New Exam item <input type="checkbox"/> Previous NRC Exam <input type="checkbox"/> Modified Bank <input type="checkbox"/> Other Exam Bank <input checked="" type="checkbox"/> X ILT Exam Bank		Reference(s):	PLOT 5016; ARC 228 E-2		Learning Objective:	PLOT-5016-4		K/A System:	295019 - Partial or Complete Loss of Instrument Air	Importance: RO / SRO 3.3 / 3.1	K/A Statement:	AA1.02 - Ability to operate and/or monitor the following as they apply to PARTIAL OR COMPLETE LOSS OF INSTRUMENT AIR : Instrument air system valves		REQUIRED MATERIALS:	None		Notes and Comments:	None	
Psychometrics																																							
Level of Knowledge	Difficulty	Time Allowance (minutes)	RO																																				
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Reference(s):	PLOT 5016; ARC 228 E-2																																						
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K/A Statement:	AA1.02 - Ability to operate and/or monitor the following as they apply to PARTIAL OR COMPLETE LOSS OF INSTRUMENT AIR : Instrument air system valves																																						
REQUIRED MATERIALS:	None																																						
Notes and Comments:	None																																						

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

50

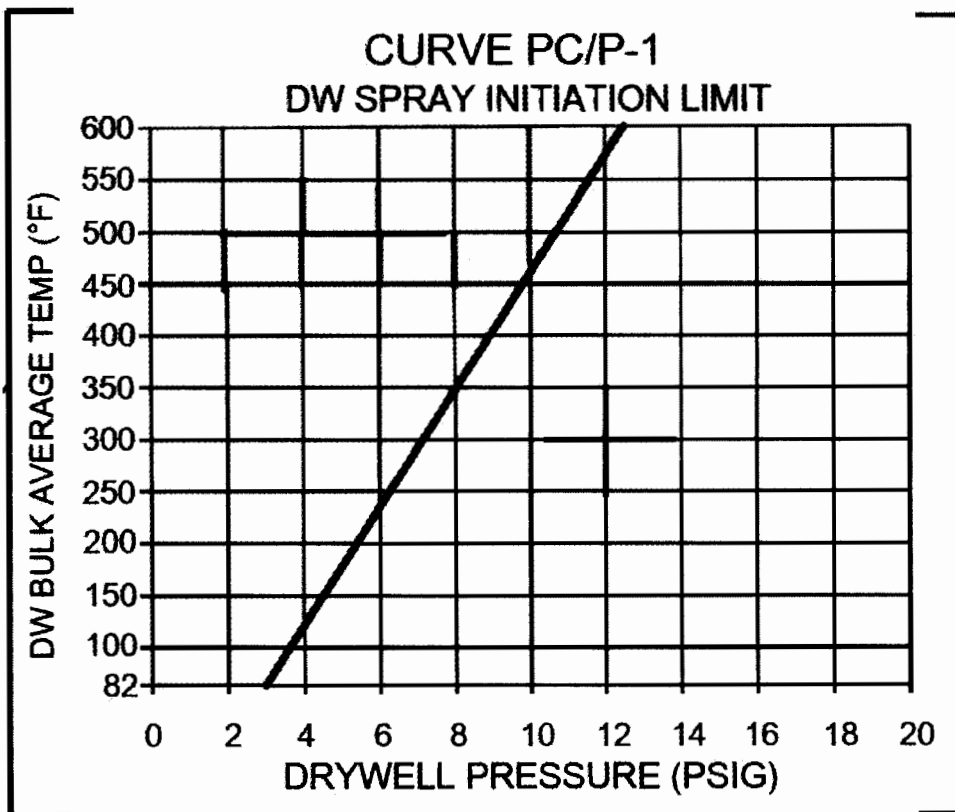
ID: 2084346

Points: 1.00

Unit 3 has entered T-102, "Primary Containment Control" due to a LOCA. The following conditions exist:

- 'A' RHR pump is in Torus and Drywell sprays per T-204 "Initiation of Containment Sprays using RHR".
- Drywell Temperature is currently reading 300°F
- Drywell Pressure is currently reading 6 psig

Using PC/P-1 (Below)



In accordance with T-102,

- drywell sprays will remain in service and shall be secured before dropping below 2 psig in the drywell.
- drywell spray flow rate will be raised to restore temperature and pressure to the SAFE side of the DWSIL curve.
- drywell sprays will be immediately secured to prevent an evaporative cooling pressure drop greater than the capacity of the Reactor Building to Torus vacuum breakers.
- drywell sprays will be immediately secured to prevent an evaporative cooling pressure drop to below the high drywell pressure scram setpoint.

Answer: A

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

Answer Explanation

Choice		Basis or Justification
Correct:	A	DW temp/press on the unsafe side of the DWSIL curve is only concern for initiation of sprays, not securing
Distractor s:	B	raising spray flow rate will move the point left and down further into unsafe side and not directed by TRIPs. Plausible if candidate misunderstands purpose of PC/P-1 curve.
	C	Plausible as this is the concern for initiation of DW sprays using PC/P-1
	D	Plausible as this is the concern for initiation, but wrong reason.

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

Question 50 Info																															
Question Type:	Multiple Choice																														
Status:	Active																														
Always select on test?	No																														
Authorized for practice?	No																														
Points:	1.00																														
Time to Complete:	2																														
Difficulty:	2.00																														
System ID:	2084346																														
User-Defined ID:	B NRC 2019																														
Cross Reference Number:	295024 EA1.11																														
Topic:	ILT-PBIG-2102-018 DWSIL Curve Plot modified																														
Num Field 1:																															
Num Field 2:																															
Text Field:																															
Comments:	<table border="1"> <thead> <tr> <th colspan="4">Psychometrics</th> </tr> <tr> <th>Level of Knowledge</th> <th>Difficulty</th> <th>Time Allowance (minutes)</th> <th>RO</th> </tr> </thead> <tbody> <tr> <td>High</td> <td></td> <td></td> <td>10CRF55.41(b)(10)</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th colspan="2">Source Documentation</th> </tr> </thead> <tbody> <tr> <td>Source:</td> <td> <div> <div>New Exam item</div> <div>Modified Bank</div> <div>X ILT Exam Bank (994151)</div> </div> <div> <div>Previous NRC Exam</div> <div>Other Exam Bank</div> </div> </td> </tr> <tr> <td>Reference(s):</td> <td>T-102 and Bases</td> </tr> <tr> <td>Learning Objective:</td> <td>PBIG-2102-1</td> </tr> <tr> <td>K/A System:</td> <td> <div>295024 - High Drywell Pressure</div> <div>Importance: RO / SRO 4.2 / 4.2</div> </td> </tr> <tr> <td>K/A Statement:</td> <td>EA1.11 - Ability to operate and/or monitor the following as they apply to HIGH DRYWELL PRESSURE: Drywell spray: Mark-I&II</td> </tr> <tr> <td>REQUIRED MATERIALS:</td> <td>None</td> </tr> <tr> <td>Notes and Comments:</td> <td>DWSIL Curve is embedded as it is needed to operate Drywell Sprays during time of High Drywell Pressure. This makes the K/A a match.</td> </tr> </tbody> </table>			Psychometrics				Level of Knowledge	Difficulty	Time Allowance (minutes)	RO	High			10CRF55.41(b)(10)	Source Documentation		Source:	<div> <div>New Exam item</div> <div>Modified Bank</div> <div>X ILT Exam Bank (994151)</div> </div> <div> <div>Previous NRC Exam</div> <div>Other Exam Bank</div> </div>	Reference(s):	T-102 and Bases	Learning Objective:	PBIG-2102-1	K/A System:	<div>295024 - High Drywell Pressure</div> <div>Importance: RO / SRO 4.2 / 4.2</div>	K/A Statement:	EA1.11 - Ability to operate and/or monitor the following as they apply to HIGH DRYWELL PRESSURE: Drywell spray: Mark-I&II	REQUIRED MATERIALS:	None	Notes and Comments:	DWSIL Curve is embedded as it is needed to operate Drywell Sprays during time of High Drywell Pressure. This makes the K/A a match.
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Level of Knowledge	Difficulty	Time Allowance (minutes)	RO																												
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Notes and Comments:	DWSIL Curve is embedded as it is needed to operate Drywell Sprays during time of High Drywell Pressure. This makes the K/A a match.																														

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

51

ID: 994302

Points: 1.00

Unit 2 is operating at 95% power.

- A recirculation flow reduction event results in entry into Region 2 of the Power to Flow Map.

Which of the following instrumentation responses is used to determine if the reactor core is experiencing thermal hydraulic instability?

- A. Peak-to-peak oscillations on RBM are 10% and growing larger.
- B. Peak-to-peak oscillations on APRMs are 10% and growing larger.
- C. Peak-to-peak oscillations on WRNMs are 10% and growing larger.
- D. WRNM short period alarms are received on a 10 second frequency.

Answer: B

Answer Explanation		
Choice	Basis or Justification	
Correct:	B	Core Thermal Hydraulic Instability (THI) may be occurring if any of the following conditions exist: *Steadily increasing confirmation counts on OPRM display with few to no resets. * Any APRM flux noise signal grows by 2 or more times its initial level, * APRM flux oscillations rise greater than or equal to 10% (peak to peak).
Distractor s:	A	Plausible as the RBM is used for neutron monitoring, however RBM not referenced as a nuclear monitoring instrument for THI.
	C	Plausible as the WRNM system is used for neutron monitoring, however the WRNM system not referenced as a nuclear monitoring instrument for THI.
	D	Plausible as period is an important factor in nuclear generation, however there is no reference to period indication as a nuclear monitoring instrument for THI.

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

Question 51 Info																																															
Question Type:	Multiple Choice																																														
Status:	Active																																														
Always select on test?	No																																														
Authorized for practice?	No																																														
Points:	1.00																																														
Time to Complete:	2																																														
Difficulty:	2.50																																														
System ID:	994302																																														
User-Defined ID:	B NRC 2019																																														
Cross Reference Number:	295001.AA2.02																																														
Topic:	ILT-1540-3-014 flow reduction event THI																																														
Num Field 1:																																															
Num Field 2:																																															
Text Field:																																															
Comments:	<table border="1"> <thead> <tr> <th colspan="4">Psychometrics</th> </tr> <tr> <th>Level of Knowledge</th> <th>Difficulty</th> <th>Time Allowance (minutes)</th> <th>RO</th> </tr> </thead> <tbody> <tr> <td>Memory</td> <td></td> <td></td> <td>10CRF55.41(b)(10)</td> </tr> <tr> <th colspan="4">Source Documentation</th> </tr> <tr> <td>Source:</td> <td colspan="3"> <input type="checkbox"/> New Exam item <input type="checkbox"/> Previous NRC Exam <input type="checkbox"/> Modified Bank <input type="checkbox"/> Other Exam Bank <input checked="" type="checkbox"/> X ILT Exam Bank </td> </tr> <tr> <td>Reference(s):</td> <td colspan="3">OT-112</td> </tr> <tr> <td>Learning Objective:</td> <td colspan="3">PLOT-1540-3</td> </tr> <tr> <td>K/A System:</td> <td colspan="2">295001 - Partial of Complete Loss of Forced Core Flow Circulation</td> <td>Importance: RO / SRO 3.1 / 3.2</td> </tr> <tr> <td>K/A Statement:</td> <td colspan="3">AA2.01 - Ability to determine and/or interpret the following as they apply to PARTIAL OR COMPLETE LOSS OF FORCED CORE FLOW CIRCULATION: Neutron monitoring</td> </tr> <tr> <td>REQUIRED MATERIALS:</td> <td colspan="3">None</td> </tr> <tr> <td>Notes and Comments:</td> <td colspan="3">None</td> </tr> </tbody> </table>			Psychometrics				Level of Knowledge	Difficulty	Time Allowance (minutes)	RO	Memory			10CRF55.41(b)(10)	Source Documentation				Source:	<input type="checkbox"/> New Exam item <input type="checkbox"/> Previous NRC Exam <input type="checkbox"/> Modified Bank <input type="checkbox"/> Other Exam Bank <input checked="" type="checkbox"/> X ILT Exam Bank			Reference(s):	OT-112			Learning Objective:	PLOT-1540-3			K/A System:	295001 - Partial of Complete Loss of Forced Core Flow Circulation		Importance: RO / SRO 3.1 / 3.2	K/A Statement:	AA2.01 - Ability to determine and/or interpret the following as they apply to PARTIAL OR COMPLETE LOSS OF FORCED CORE FLOW CIRCULATION: Neutron monitoring			REQUIRED MATERIALS:	None			Notes and Comments:	None		
Psychometrics																																															
Level of Knowledge	Difficulty	Time Allowance (minutes)	RO																																												
Memory			10CRF55.41(b)(10)																																												
Source Documentation																																															
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Learning Objective:	PLOT-1540-3																																														
K/A System:	295001 - Partial of Complete Loss of Forced Core Flow Circulation		Importance: RO / SRO 3.1 / 3.2																																												
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REQUIRED MATERIALS:	None																																														
Notes and Comments:	None																																														

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

52

ID: 2084405

Points: 1.00

Unit 2 is at 100% power

- ARC-007 D-2b "2 Reactor Bldg. Oper'G/Drywell Area Smoke Detectors A76, Elev. 165'-0"" is received

The crew enters FF-01 and the PRO initially dispatches the ____ (1) ____

- The report back is that the E-224 Bus is on fire

The PRO trips the E-224 breaker and starts the ____ (2) ____

- A. (1) Entire Fire Brigade
(2) Motor Driven Fire Pump
- B. (1) Entire Fire Brigade
(2) Diesel Driven Fire Pump
- C. (1) Incident Commander and Ops HP
(2) Motor Driven Fire Pump
- D. (1) Incident Commander and Ops HP
(2) Diesel Driven Fire Pump

Answer: B

Answer Explanation		
Choice		Basis or Justification
Correct:	B	In accordance with FF-01 step 6.2.1, the entire fire brigade is dispatched for a fire alarm in the Reactor building. Step 6.2.4 has the PRO start a fire pump in the event of an actual fire reported. E-224 is the power supply to the Motor Driven fire pump, therefore when it was tripped by the PRO the only available pump to be started is the Diesel Driven Fire Pump
Distractor s:	A	Plausible if candidate does not recall the power supply to the Motor Driven Fire pump.
	C	Plausible as step 6.2.2 says that the Incident Commander and Ops HP should be dispatched for a fire alarm received in the control room from a detection system. Plausible if candidate misapplies step 6.2.1 that the entire fire brigade shall be dispatched for a fire alarm in the reactor building. Also the Motor driven fire pumps power supply is de-energized.
	D	Plausible as step 6.2.2 says that the Incident Commander and Ops HP should be dispatched for a fire alarm received in the control room from a detection system. Plausible if candidate misapplies step 6.2.1 that the entire fire brigade shall be dispatched for a fire alarm in the reactor building.

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

Question 52 Info																															
Question Type:	Multiple Choice																														
Status:	Active																														
Always select on test?	No																														
Authorized for practice?	No																														
Points:	1.00																														
Time to Complete:	3																														
Difficulty:	2.00																														
System ID:	2084405																														
User-Defined ID:	B NRC 2019																														
Cross Reference Number:	600000 AA2.03																														
Topic:	ILT-5037-9f FF-01 usage																														
Num Field 1:																															
Num Field 2:																															
Text Field:																															
Comments:	<table border="1"> <thead> <tr> <th colspan="4">Psychometrics</th> </tr> <tr> <th>Level of Knowledge</th> <th>Difficulty</th> <th>Time Allowance (minutes)</th> <th>RO</th> </tr> </thead> <tbody> <tr> <td>High</td> <td></td> <td></td> <td>10CRF55.41(b)(10)</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th colspan="2">Source Documentation</th> </tr> </thead> <tbody> <tr> <td>Source:</td> <td> <input checked="" type="checkbox"/> New Exam item Previous NRC Exam <input type="checkbox"/> Modified Bank Other Exam Bank <input type="checkbox"/> ILT Exam Bank </td> </tr> <tr> <td>Reference(s):</td> <td>FF-01</td> </tr> <tr> <td>Learning Objective:</td> <td>PLOT-5037-9f</td> </tr> <tr> <td>K/A System:</td> <td> 600000 - Plant Fire On Site Importance: RO / SRO 2.8 / 3.2 </td> </tr> <tr> <td>K/A Statement:</td> <td>AA2.03 - Ability to determine and interpret the following as they apply to PLANT FIRE ON SITE: Fire alarm</td> </tr> <tr> <td>REQUIRED MATERIALS:</td> <td>None</td> </tr> <tr> <td>Notes and Comments:</td> <td>None</td> </tr> </tbody> </table>			Psychometrics				Level of Knowledge	Difficulty	Time Allowance (minutes)	RO	High			10CRF55.41(b)(10)	Source Documentation		Source:	<input checked="" type="checkbox"/> New Exam item Previous NRC Exam <input type="checkbox"/> Modified Bank Other Exam Bank <input type="checkbox"/> ILT Exam Bank	Reference(s):	FF-01	Learning Objective:	PLOT-5037-9f	K/A System:	600000 - Plant Fire On Site Importance: RO / SRO 2.8 / 3.2	K/A Statement:	AA2.03 - Ability to determine and interpret the following as they apply to PLANT FIRE ON SITE: Fire alarm	REQUIRED MATERIALS:	None	Notes and Comments:	None
Psychometrics																															
Level of Knowledge	Difficulty	Time Allowance (minutes)	RO																												
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Reference(s):	FF-01																														
Learning Objective:	PLOT-5037-9f																														
K/A System:	600000 - Plant Fire On Site Importance: RO / SRO 2.8 / 3.2																														
K/A Statement:	AA2.03 - Ability to determine and interpret the following as they apply to PLANT FIRE ON SITE: Fire alarm																														
REQUIRED MATERIALS:	None																														
Notes and Comments:	None																														

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

53

ID: 994313

Points: 1.00

In accordance with SE-1, "Plant Shutdown from the Remote Shutdown Panel", why is the reactor SCRAMMED prior to evacuating the Main Control Room?

- A. This action ensures that inventory makeup requirements will be within Condensate capability.
- B. This action ensures that inventory makeup requirements will be within HPCI capability.
- C. This action ensures that inventory makeup requirements will be within RCIC capability.
- D. This action ensures that inventory makeup requirements will be within CRD capability.

Answer: C

Answer Explanation

Choice		Basis or Justification
Correct:	C	In accordance with SE-1 bases, scrambling the unit assures that makeup to the reactor will be based on decay heat which can be adequately handled by the RCIC System.
Distractor s:	A	Plausible as makeup is maintained within condensate capability, condensate is not controlled from the Remote shutdown and this is not the reason the reactor is scrammed prior to evacuating the MCR.
	B	Plausible as SE-10 is also a procedure used when abandoning control room and candidate might confuse the two. HPCI is used only in SE-10 at the Alternate Shutdown Panel and not applicable for this condition.
	D	Plausible as the CRD pumps can be controlled from the remote shutdown panel IAW SE-1, however scrambling the plant does not maintain the plant within makeup capability of CRD

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

Question 53 Info																															
Question Type:	Multiple Choice																														
Status:	Active																														
Always select on test?	No																														
Authorized for practice?	No																														
Points:	1.00																														
Time to Complete:	2																														
Difficulty:	3.00																														
System ID:	994313																														
User-Defined ID:	B NRC 2019																														
Cross Reference Number:	295016 AA2.01																														
Topic:	ILT-1555-1-014 Which one of the following is the reason why the reactor is SCRAMMED prior to evac																														
Num Field 1:																															
Num Field 2:																															
Text Field:																															
Comments:	<table border="1"> <thead> <tr> <th colspan="4">Psychometrics</th> </tr> <tr> <th>Level of Knowledge</th> <th>Difficulty</th> <th>Time Allowance (minutes)</th> <th>RO</th> </tr> </thead> <tbody> <tr> <td>Memory</td> <td></td> <td></td> <td>10CRF55.41(b)(10)</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th colspan="2">Source Documentation</th> </tr> </thead> <tbody> <tr> <td>Source:</td> <td> <div> New Exam item Previous NRC Exam Modified Bank Other Exam Bank X ILT Exam Bank </div> </td> </tr> <tr> <td>Reference(s):</td> <td>SE-1 bases</td> </tr> <tr> <td>Learning Objective:</td> <td>PLOT-1555-1</td> </tr> <tr> <td>K/A System:</td> <td> <div> 295016 - Control Room Abandonment Importance: RO / SRO 4.1 / 4.1 </div> </td> </tr> <tr> <td>K/A Statement:</td> <td>AA2.01 - Ability to determine and/or interpret the following as they apply to CONTROL ROOM ABANDONMENT : Reactor power</td> </tr> <tr> <td>REQUIRED MATERIALS:</td> <td>None</td> </tr> <tr> <td>Notes and Comments:</td> <td>None</td> </tr> </tbody> </table>			Psychometrics				Level of Knowledge	Difficulty	Time Allowance (minutes)	RO	Memory			10CRF55.41(b)(10)	Source Documentation		Source:	<div> New Exam item Previous NRC Exam Modified Bank Other Exam Bank X ILT Exam Bank </div>	Reference(s):	SE-1 bases	Learning Objective:	PLOT-1555-1	K/A System:	<div> 295016 - Control Room Abandonment Importance: RO / SRO 4.1 / 4.1 </div>	K/A Statement:	AA2.01 - Ability to determine and/or interpret the following as they apply to CONTROL ROOM ABANDONMENT : Reactor power	REQUIRED MATERIALS:	None	Notes and Comments:	None
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Learning Objective:	PLOT-1555-1																														
K/A System:	<div> 295016 - Control Room Abandonment Importance: RO / SRO 4.1 / 4.1 </div>																														
K/A Statement:	AA2.01 - Ability to determine and/or interpret the following as they apply to CONTROL ROOM ABANDONMENT : Reactor power																														
REQUIRED MATERIALS:	None																														
Notes and Comments:	None																														

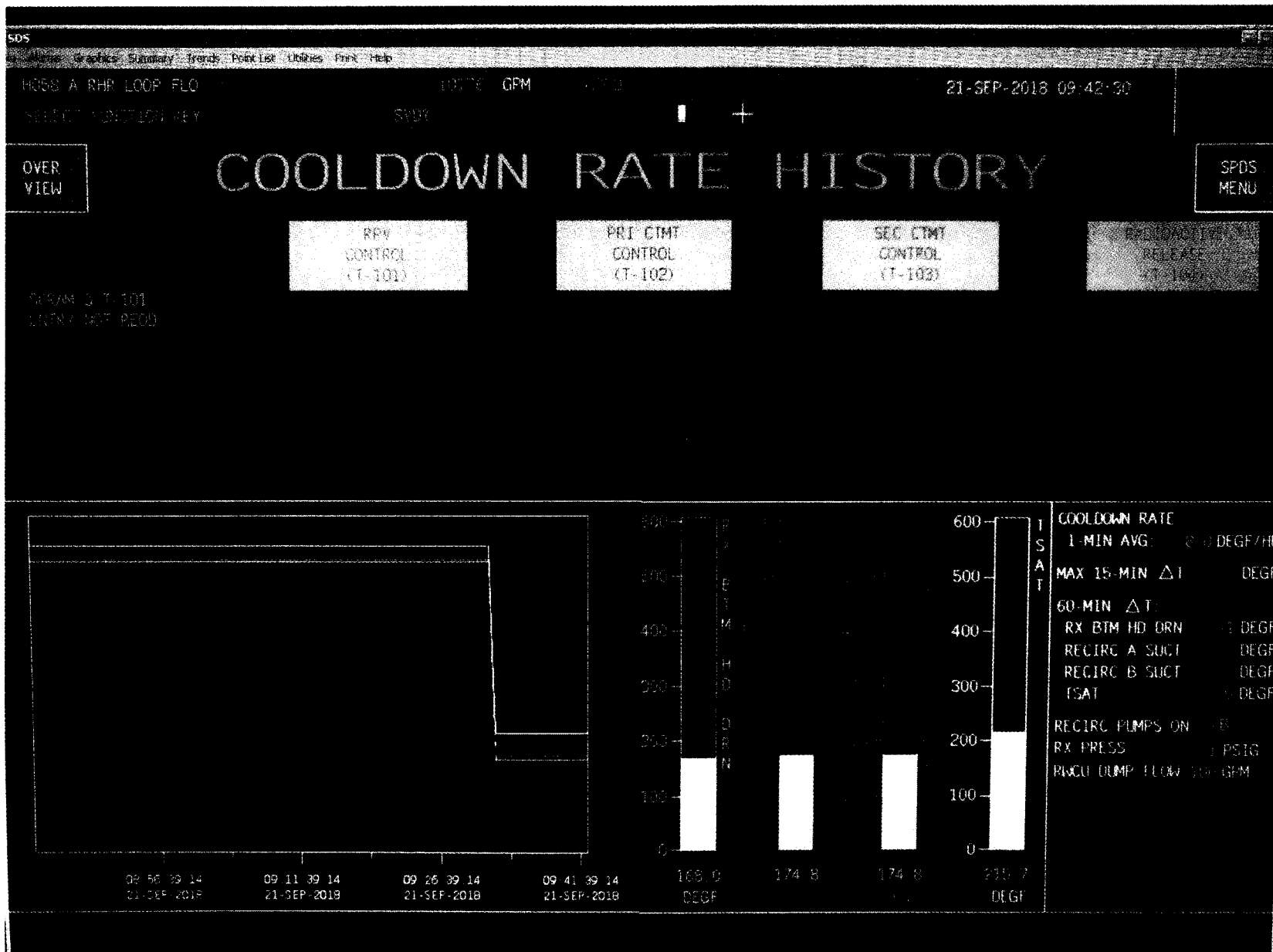
54

ID: 1104444

Points: 1.00

Unit 2 is in Shutdown Cooling with the "A" RHR pump and "A" HPSW pump running with the MO-2-10-89A "A HPSW HX OUT" OPEN. The following information is available from the process computer:

(NEXT PAGE)

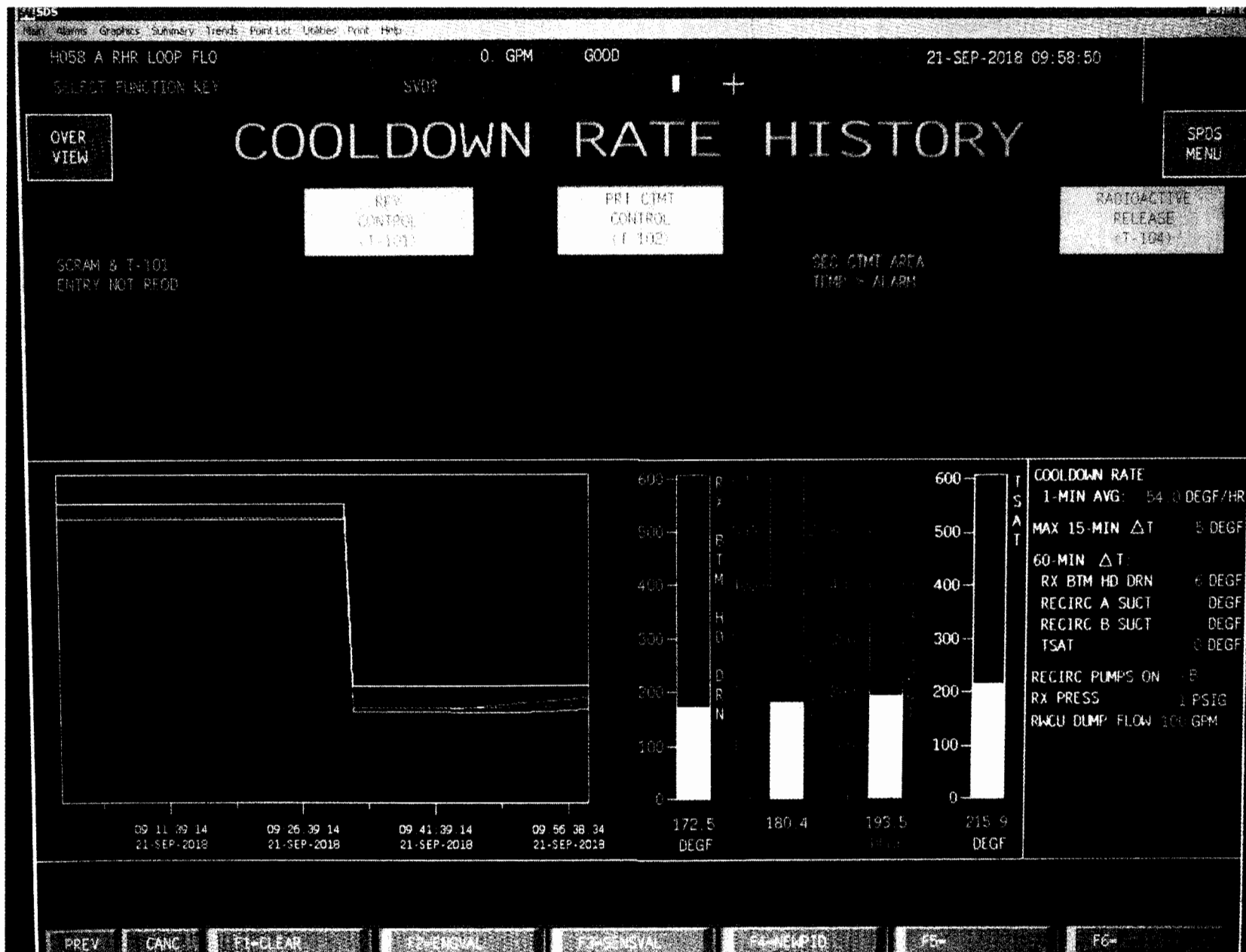


EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

15 minutes later, with no operator action, the process computer provides the following information:

(NEXT PAGE)



EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

Compare the above information, then choose the correct statement.

- A. Shutdown cooling is in-service, remove shutdown cooling from service to prevent exceeding the Cooldown rate.
- B. Shutdown cooling is in-service, continue to monitor temperatures using ST-O-080-500-2, "Recording and Monitoring Reactor Vessel Temperatures".
- C. Shutdown cooling is not in-service, enter ON-125, "Loss or Unavailability of Shutdown Cooling".
- D. Shutdown cooling is not in-service, enter GP-12, "Core Cooling Procedure".

Answer: C

Answer Explanation		
NEED DATA THAT HAS TEMPERATURE GOING UP FROM T=0 TO T=15 NEED DATA THAT INDICATES THAT THE RHR PUMP IS OFF		
Choice	Basis or Justification	
Correct:	C	Temperatures are rising indicating that Shutdown cooling is no longer in-service. Loss of Shutdown cooling is a symptom for entry into ON-125.
Distractor s:	A	Shutdown not in-service. Plausible if the candidate does not interpret the data correctly and believes the cooldown rate has accelerated and would violate Administrative cooldown limits.
	B	Shutdown not in-service. Plausible if the candidate does not interpret the data correctly, and believes everything is in service properly and a good cooldown rate is achieved.
	D	GP-12 is used for a planned loss of Shutdown Cooling not for a unexpected loss of shutdown cooling. Plausible if the candidate does not understand when GP-12 is used.

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

Question 54 Info																																							
Question Type:	Multiple Choice																																						
Status:	Active																																						
Always select on test?	No																																						
Authorized for practice?	No																																						
Points:	1.00																																						
Time to Complete:	0																																						
Difficulty:	1.00																																						
System ID:	1104444																																						
User-Defined ID:	B NRC 2019																																						
Cross Reference Number:	295021 2.1.19																																						
Topic:	ILT-1550-28a-003																																						
Num Field 1:																																							
Num Field 2:																																							
Text Field:																																							
Comments:	<table border="1"> <thead> <tr> <th colspan="4">Psychometrics</th> </tr> <tr> <th>Level of Knowledge</th> <th>Difficulty</th> <th>Time Allowance (minutes)</th> <th>RO</th> </tr> </thead> <tbody> <tr> <td>HIGH</td> <td></td> <td></td> <td>10CRF55.41(b) (10)</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th colspan="3">Source Documentation</th> </tr> </thead> <tbody> <tr> <td>Source:</td> <td colspan="2"> <input checked="" type="checkbox"/> New Exam item <input type="checkbox"/> Modified Bank <input type="checkbox"/> Bank <input type="checkbox"/> ILT Exam Bank </td> </tr> <tr> <td>Reference(s):</td> <td colspan="2">ON-125</td> </tr> <tr> <td>Learning Objective:</td> <td colspan="2">PLOT</td> </tr> <tr> <td>K/A System:</td> <td>295021 Loss of Shutdown Cooling</td> <td>Importance; RO / SRO 3.9/ 3.8</td> </tr> <tr> <td>K/A Statement:</td> <td colspan="2">2.1.19 Ability to use plant computers to evaluate system or component status</td> </tr> <tr> <td>REQUIRED MATERIALS:</td> <td colspan="2">None</td> </tr> <tr> <td>Notes and Comments:</td> <td colspan="2">Plant computer screenshots are embedded to match the K/A.</td> </tr> </tbody> </table>			Psychometrics				Level of Knowledge	Difficulty	Time Allowance (minutes)	RO	HIGH			10CRF55.41(b) (10)	Source Documentation			Source:	<input checked="" type="checkbox"/> New Exam item <input type="checkbox"/> Modified Bank <input type="checkbox"/> Bank <input type="checkbox"/> ILT Exam Bank		Reference(s):	ON-125		Learning Objective:	PLOT		K/A System:	295021 Loss of Shutdown Cooling	Importance; RO / SRO 3.9/ 3.8	K/A Statement:	2.1.19 Ability to use plant computers to evaluate system or component status		REQUIRED MATERIALS:	None		Notes and Comments:	Plant computer screenshots are embedded to match the K/A.	
Psychometrics																																							
Level of Knowledge	Difficulty	Time Allowance (minutes)	RO																																				
HIGH			10CRF55.41(b) (10)																																				
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REQUIRED MATERIALS:	None																																						
Notes and Comments:	Plant computer screenshots are embedded to match the K/A.																																						

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

55

ID: 993763

Points: 1.00

The following step is from T-104, "RADIOACTIVITY RELEASE"

**BEFORE THE RAD RELEASE REACHES THE ALERT LEVEL,
PERFORM THE FOLLOWING ON THE OFFENDING UNIT:**

- 1. MANUALLY SCRAM THE REACTOR USING GP-4**
- 2. ENTER T-101 AND EXECUTE IT
CONCURRENTLY WITH THIS PROCEDURE**
- 3. UNLESS DIRECTED OTHERWISE,
PERFORM RPV DEPRESSURIZATION PER T-101**

What is the bases of performing this step?

- A. To slow the rate of fuel damage occurring in the reactor core and thus reduce the rate of release outside of the containment.
- B. To lower reactor pressure and allow low pressure systems to inject into the reactor, limiting the release to the environment.
- C. To reduce the production of radioisotopes, thereby reducing the discharge to the environment.
- D. To reduce the boil-off rate of inventory which raises reactor water level, thereby reducing the discharge to the environment.

Answer: C

Answer Explanation		
Choice		Basis or Justification
Correct:	C	IAW T-104 bases this is the correct bases for the performance of this step
Distractor s:	A	Plausible because scrambling the reactor would slow the rate of fuel damage, however that is not the bases for this step
	B	Plausible because the step also has you lower reactor pressure, however the reason for that is to reduce the RPV energy driving the discharge, not to inject with low pressure systems.
	D	Plausible as a reduction in water level could cause further damage to the core.

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

Question 55 Info																																							
Question Type:	Multiple Choice																																						
Status:	Active																																						
Always select on test?	No																																						
Authorized for practice?	No																																						
Points:	1.00																																						
Time to Complete:	2																																						
Difficulty:	1.00																																						
System ID:	993763																																						
User-Defined ID:	B NRC 2019																																						
Cross Reference Number:	295038 G 2.4.18																																						
Topic:	ILT-PBIG2104-5-003 Basis for scram at ALERT																																						
Num Field 1:																																							
Num Field 2:																																							
Text Field:																																							
Comments:	<table border="1"> <thead> <tr> <th colspan="4">Psychometrics</th> </tr> <tr> <th>Level of Knowledge</th> <th>Difficulty</th> <th>Time Allowance (minutes)</th> <th>RO</th> </tr> </thead> <tbody> <tr> <td>Memory</td> <td></td> <td></td> <td>10CRF55.41(b)(10)</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th colspan="3">Source Documentation</th> </tr> </thead> <tbody> <tr> <td>Source:</td> <td colspan="2"> <input type="checkbox"/> New Exam item <input type="checkbox"/> Previous NRC Exam <input type="checkbox"/> Modified Bank <input type="checkbox"/> Other Exam Bank <input checked="" type="checkbox"/> ILT Exam Bank </td> </tr> <tr> <td>Reference(s):</td> <td colspan="2">T-104 and Bases.</td> </tr> <tr> <td>Learning Objective:</td> <td colspan="2">PBIG 2104-5</td> </tr> <tr> <td>K/A System:</td> <td>295038 - High Off-Site Release Rate</td> <td>Importance: RO / SRO 3.3 / 4.0</td> </tr> <tr> <td>K/A Statement:</td> <td colspan="2">2.4.18 - Knowledge of the specific bases for EOPs.</td> </tr> <tr> <td>REQUIRED MATERIALS:</td> <td colspan="2">None</td> </tr> <tr> <td>Notes and Comments:</td> <td colspan="2">None</td> </tr> </tbody> </table>			Psychometrics				Level of Knowledge	Difficulty	Time Allowance (minutes)	RO	Memory			10CRF55.41(b)(10)	Source Documentation			Source:	<input type="checkbox"/> New Exam item <input type="checkbox"/> Previous NRC Exam <input type="checkbox"/> Modified Bank <input type="checkbox"/> Other Exam Bank <input checked="" type="checkbox"/> ILT Exam Bank		Reference(s):	T-104 and Bases.		Learning Objective:	PBIG 2104-5		K/A System:	295038 - High Off-Site Release Rate	Importance: RO / SRO 3.3 / 4.0	K/A Statement:	2.4.18 - Knowledge of the specific bases for EOPs.		REQUIRED MATERIALS:	None		Notes and Comments:	None	
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K/A Statement:	2.4.18 - Knowledge of the specific bases for EOPs.																																						
REQUIRED MATERIALS:	None																																						
Notes and Comments:	None																																						

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

56

ID: 2084439

Points: 1.00

Unit 2 is at 100% power

- "Generator Protection Circuit Energized" ARC 206 L-1 alarms
- "2 Gen Stator Coolant or H2 Seal Oil Trouble" ARC 220 A-5 alarms

If applicable OT actions are performed within 1 minute of receipt of the alarms, T-101 will initially be entered on ____ (1) ____.

If applicable OT actions are performed 3 minutes after receipt of the alarms, T-101 will initially be entered on ____ (2) ____.

- A. (1) RPV level low
(2) RPV level low
- B. (1) RPV level low
(2) RPV pressure high
- C. (1) RPV pressure high
(2) RPV level low
- D. (1) RPV pressure high
(2) RPV pressure high

Answer: B

Answer Explanation

Choice		Basis or Justification
Correct:	B	With Reactor power at 100% and a validated loss of stator water cooling as indicated by the 2 listed alarms, the main turbine will trip in 2 minutes. Actions in OT-113 "Loss of Stator Cooling" require performing a GP-4 "Manual Reactor Scram". If this step is performed within 1 minute, the initial entry in T-101 will be for low reactor water level, which will occur as the GP-4 is performed. If the GP-4 is delayed beyond 2 minutes, the turbine will trip, causing a reactor scram and reactor pressure to rise beyond the 1085 psig entry point for T-101.
Distractors:	A	Plausible if candidate forgets timing of Turbine trip. In OT-113, if power is between 9000 and 26000 amps, the turbine will trip in 3.5 minutes. Power level is well above 26000 amps at 100% power.
	C	Plausible if candidate does not understand the effects of a loss of stator cooling
	D	Plausible if candidate does not understand the actions of OT-113 "Loss of Stator Cooling"

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

Question 56 Info																																															
Question Type:	Multiple Choice																																														
Status:	Active																																														
Always select on test?	No																																														
Authorized for practice?	No																																														
Points:	1.00																																														
Time to Complete:	0																																														
Difficulty:	0.00																																														
System ID:	2084439																																														
User-Defined ID:	B NRC 2019																																														
Cross Reference Number:	295005 G2.4.1																																														
Topic:	PLOT-1540-7-002 Trips entry on OT-113																																														
Num Field 1:																																															
Num Field 2:																																															
Text Field:																																															
Comments:	<table border="1"> <thead> <tr> <th colspan="4">Psychometrics</th> </tr> <tr> <th>Level of Knowledge</th> <th>Difficulty</th> <th>Time Allowance (minutes)</th> <th>RO</th> </tr> </thead> <tbody> <tr> <td>High</td> <td></td> <td></td> <td>10CRF55.41(b)(10)</td> </tr> <tr> <th colspan="4">Source Documentation</th> </tr> <tr> <td>Source:</td> <td colspan="3"> <input checked="" type="checkbox"/> New Exam item Previous NRC Exam <input type="checkbox"/> Modified Bank Other Exam Bank <input type="checkbox"/> ILT Exam Bank </td> </tr> <tr> <td>Reference(s):</td> <td colspan="3">OT-113 and bases, T-101</td> </tr> <tr> <td>Learning Objective:</td> <td colspan="3">PLOT-1540</td> </tr> <tr> <td>K/A System:</td> <td colspan="2">295005 - Main Turbine Trip</td> <td>Importance: RO / SRO 4.6 / 4.8</td> </tr> <tr> <td>K/A Statement:</td> <td colspan="3">2.4.1 - Knowledge of EOP entry conditions and immediate action steps.</td> </tr> <tr> <td>REQUIRED MATERIALS:</td> <td colspan="3">None</td> </tr> <tr> <td>Notes and Comments:</td> <td colspan="3">None</td> </tr> </tbody> </table>			Psychometrics				Level of Knowledge	Difficulty	Time Allowance (minutes)	RO	High			10CRF55.41(b)(10)	Source Documentation				Source:	<input checked="" type="checkbox"/> New Exam item Previous NRC Exam <input type="checkbox"/> Modified Bank Other Exam Bank <input type="checkbox"/> ILT Exam Bank			Reference(s):	OT-113 and bases, T-101			Learning Objective:	PLOT-1540			K/A System:	295005 - Main Turbine Trip		Importance: RO / SRO 4.6 / 4.8	K/A Statement:	2.4.1 - Knowledge of EOP entry conditions and immediate action steps.			REQUIRED MATERIALS:	None			Notes and Comments:	None		
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Reference(s):	OT-113 and bases, T-101																																														
Learning Objective:	PLOT-1540																																														
K/A System:	295005 - Main Turbine Trip		Importance: RO / SRO 4.6 / 4.8																																												
K/A Statement:	2.4.1 - Knowledge of EOP entry conditions and immediate action steps.																																														
REQUIRED MATERIALS:	None																																														
Notes and Comments:	None																																														

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

57

ID: 2084460

Points: 1.00

The following conditions exist on Unit 2

- Torus temperature is 190°F and rising slowly
- Torus level is 13 ft and steady
- A and C RHR pump are in Torus Cooling in accordance with RRC 10.1-2 "RHR System Torus Cooling During a Plant Event"
- A and C RHR pump Amps are oscillating
- FI-139A "A RHR Loop Flow" is oscillating between 20,000 and 21,000 gpm

What is the proper response to these conditions regarding the RHR system?

- A. Throttle OPEN MO-34A "Full Flow Test Valve"
- B. Throttle OPEN CV-2677A and CV-2677C "LPCI A(C) Control Valve"
- C. Throttle CLOSE MO-34A "Full Flow Test Valve"
- D. Throttle CLOSE CV-2677A and CV-2677C "LPCI A(C) Control Valve"

Answer: D

Answer Explanation		
Choice		Basis or Justification
Correct:	D	There are indications of RHR pump cavitation given by the oscillating amps and flow. RRC 10.1-2 "RHR System Torus Cooling During a Plant Event" has you throttle CV-2677A, C as required to control flow. To reduce pump cavitation flow must be lowered by throttling closed CV-2677A and C.
Distractor s:	A	Plausible as this is the full flow test valve and is able to be throttled. However RRC 10.1-2 does not call for the MO-34A to be throttled. Also opening the valve would cause more flow, and make cavitation worse. Candidate may also pick this as Torus temperature is rising and more flow would produce more cooling, however operability of the pump takes precedence.
	B	Plausible as RRC 10.1-2 allows CV -2677A and C to be throttled, however opening these valves would cause more flow, and make cavitation worse. Candidate may pick this as Torus temperature is rising and more flow would produce more cooling, however operability of the pumps takes precedence.
	C	Plausible as this is the full flow test valve and is able to be throttled. However RRC 10.1-2 does not call for the MO-34A to be throttled.

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

Question 57 Info																																	
Question Type:	Multiple Choice																																
Status:	Active																																
Always select on test?	No																																
Authorized for practice?	No																																
Points:	1.00																																
Time to Complete:	0																																
Difficulty:	0.00																																
System ID:	2084460																																
User-Defined ID:	B NRC 2019																																
Cross Reference Number:	295030 EA1.01																																
Topic:	ILT-2102-6-002 Response to Cavitating RHR pumps																																
Num Field 1:																																	
Num Field 2:																																	
Text Field:																																	
Comments:	<table border="1"> <thead> <tr> <th colspan="4">Psychometrics</th> </tr> <tr> <th>Level of Knowledge</th> <th>Difficulty</th> <th>Time Allowance (minutes)</th> <th>RO</th> </tr> </thead> <tbody> <tr> <td>High</td> <td></td> <td></td> <td>10CRF55.41(b)(10)</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th colspan="2">Source Documentation</th> </tr> </thead> <tbody> <tr> <td>Source:</td> <td> <input checked="" type="checkbox"/> New Exam item Previous NRC Exam <input type="checkbox"/> Modified Bank Other Exam Bank <input type="checkbox"/> ILT Exam Bank </td> </tr> <tr> <td>Reference(s):</td> <td>RRC 10.1-2, T-102 sht 1 and 3</td> </tr> <tr> <td>Learning Objective:</td> <td>DBG-2102</td> </tr> <tr> <td>K/A System:</td> <td> 295030 - Low Suppression Pool Water Level <table border="1"> <tr> <td>Importance: RO / SRO</td> </tr> <tr> <td>3.6 / 3.8</td> </tr> </table> </td> </tr> <tr> <td>K/A Statement:</td> <td> EA1.01 - Ability to operate and/or monitor the following as they apply to LOW SUPPRESSION POOL WATER LEVEL: ECCS systems (NPSH considerations): Plant-Specific </td> </tr> <tr> <td>REQUIRED MATERIALS:</td> <td>None</td> </tr> <tr> <td>Notes and Comments:</td> <td>None</td> </tr> </tbody> </table>			Psychometrics				Level of Knowledge	Difficulty	Time Allowance (minutes)	RO	High			10CRF55.41(b)(10)	Source Documentation		Source:	<input checked="" type="checkbox"/> New Exam item Previous NRC Exam <input type="checkbox"/> Modified Bank Other Exam Bank <input type="checkbox"/> ILT Exam Bank	Reference(s):	RRC 10.1-2, T-102 sht 1 and 3	Learning Objective:	DBG-2102	K/A System:	295030 - Low Suppression Pool Water Level <table border="1"> <tr> <td>Importance: RO / SRO</td> </tr> <tr> <td>3.6 / 3.8</td> </tr> </table>	Importance: RO / SRO	3.6 / 3.8	K/A Statement:	EA1.01 - Ability to operate and/or monitor the following as they apply to LOW SUPPRESSION POOL WATER LEVEL: ECCS systems (NPSH considerations): Plant-Specific	REQUIRED MATERIALS:	None	Notes and Comments:	None
Psychometrics																																	
Level of Knowledge	Difficulty	Time Allowance (minutes)	RO																														
High			10CRF55.41(b)(10)																														
Source Documentation																																	
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Reference(s):	RRC 10.1-2, T-102 sht 1 and 3																																
Learning Objective:	DBG-2102																																
K/A System:	295030 - Low Suppression Pool Water Level <table border="1"> <tr> <td>Importance: RO / SRO</td> </tr> <tr> <td>3.6 / 3.8</td> </tr> </table>	Importance: RO / SRO	3.6 / 3.8																														
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K/A Statement:	EA1.01 - Ability to operate and/or monitor the following as they apply to LOW SUPPRESSION POOL WATER LEVEL: ECCS systems (NPSH considerations): Plant-Specific																																
REQUIRED MATERIALS:	None																																
Notes and Comments:	None																																

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

58

ID: 994776

Points: 1.00

Given the following:

- A startup is in progress on Unit 3 with reactor power at 5%
- Panel 30Y033 is inadvertently de-energized, resulting in a loss of power to portions of PCIS logic

Which of the following RWCU System containment isolation valves close as a result of this event?

1. MO-3-12-15, Cleanup Inlet Isolation-Inboard
 2. MO-3-12-18, Cleanup Inlet Isolation-Outboard
 3. MO-3-12-68, Cleanup Outlet Isolation
- A. 1 ONLY
- B. 2 ONLY
- C. 2 and 3 ONLY
- D. 1, 2, and 3

Answer: D

Answer Explanation		
Correct:	D	A loss of Panel 30Y033 causes a loss of power to PCIS inboard isolation valve logic. This results in closure of associated inboard containment isolation valves, including RWCU valve MO-3-12-15. Loss of 30Y033 also results in closure of RWCU outboard containment isolation valves MO-3-12-18 and MO-3-12-68. This is due to loss of power to the NRHX high outlet temperature relay, which feeds both the inboard and outboard RWCU isolation valve logic. Note #2 in GP-8.C describes the RWCU response to a loss of 30Y033.
Distractors:	A	MO-3-12-18 and MO-3-12-68 also close on a loss of 30Y33. Plausible if candidate does not understand the further loss of power to the high outlet temperature relay
	B	MO-3-12-15 and MO-3-12-68 also close on a loss of 30Y33. Plausible if candidate believes the loss of 30Y33 only effects the outboard valve.
	C	MO-3-12-15 also closes on a loss of 30Y33. Plausible if candidate believes the loss of 30Y33 only effects the outboard and outlet valves as would be true on a loss of 30Y34

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

Question 58 Info																															
Question Type:	Multiple Choice																														
Status:	Active																														
Always select on test?	No																														
Authorized for practice?	No																														
Points:	1.00																														
Time to Complete:	2																														
Difficulty:	1.00																														
System ID:	994776																														
User-Defined ID:	B NRC 2019																														
Cross Reference Number:	295003 AK3.06																														
Topic:	ITL-5012-7D-001 Given the following: *A startup is in progress on Unit 3 with reactor power at 5%.																														
Num Field 1:																															
Num Field 2:																															
Text Field:																															
Comments:	<table border="1"> <thead> <tr> <th colspan="4">Psychometrics</th> </tr> <tr> <th>Level of Knowledge</th> <th>Difficulty</th> <th>Time Allowance (minutes)</th> <th>RO</th> </tr> </thead> <tbody> <tr> <td>Memory</td> <td></td> <td></td> <td>10CRF55.41(b)(7)</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th colspan="2">Source Documentation</th> </tr> </thead> <tbody> <tr> <td>Source:</td> <td> <div> <div>New Exam item</div> <div>Modified Bank</div> <div>X ILT Exam Bank</div> </div> <div>Previous NRC Exam</div> <div>Other Exam Bank</div> </td> </tr> <tr> <td>Reference(s):</td> <td>GP-8.C; M-1-S-23; AO 58A.2-3</td> </tr> <tr> <td>Learning Objective:</td> <td>ILT-5012-7D</td> </tr> <tr> <td>K/A System:</td> <td> <div>295003 - Partial or Complete Loss of A.C. Power</div> <div>Importance: RO / SRO 3.7 / 3.7</div> </td> </tr> <tr> <td>K/A Statement:</td> <td>AK3.06 - Knowledge of the reasons for the following responses as they apply to PARTIAL OR COMPLETE LOSS OF A.C. POWER : Containment isolation</td> </tr> <tr> <td>REQUIRED MATERIALS:</td> <td>None</td> </tr> <tr> <td>Notes and Comments:</td> <td>This meets the K/A because the student must also know that a loss of 30Y033 also results in closure of RWCU outboard containment isolation valves MO-3-12-18 and MO-3-12-68. This is due to loss of power to the NRHX high outlet temperature relay, which feeds both the inboard and outboard RWCU isolation valve logic.</td> </tr> </tbody> </table>			Psychometrics				Level of Knowledge	Difficulty	Time Allowance (minutes)	RO	Memory			10CRF55.41(b)(7)	Source Documentation		Source:	<div> <div>New Exam item</div> <div>Modified Bank</div> <div>X ILT Exam Bank</div> </div> <div>Previous NRC Exam</div> <div>Other Exam Bank</div>	Reference(s):	GP-8.C; M-1-S-23; AO 58A.2-3	Learning Objective:	ILT-5012-7D	K/A System:	<div>295003 - Partial or Complete Loss of A.C. Power</div> <div>Importance: RO / SRO 3.7 / 3.7</div>	K/A Statement:	AK3.06 - Knowledge of the reasons for the following responses as they apply to PARTIAL OR COMPLETE LOSS OF A.C. POWER : Containment isolation	REQUIRED MATERIALS:	None	Notes and Comments:	This meets the K/A because the student must also know that a loss of 30Y033 also results in closure of RWCU outboard containment isolation valves MO-3-12-18 and MO-3-12-68. This is due to loss of power to the NRHX high outlet temperature relay, which feeds both the inboard and outboard RWCU isolation valve logic.
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Memory			10CRF55.41(b)(7)																												
Source Documentation																															
Source:	<div> <div>New Exam item</div> <div>Modified Bank</div> <div>X ILT Exam Bank</div> </div> <div>Previous NRC Exam</div> <div>Other Exam Bank</div>																														
Reference(s):	GP-8.C; M-1-S-23; AO 58A.2-3																														
Learning Objective:	ILT-5012-7D																														
K/A System:	<div>295003 - Partial or Complete Loss of A.C. Power</div> <div>Importance: RO / SRO 3.7 / 3.7</div>																														
K/A Statement:	AK3.06 - Knowledge of the reasons for the following responses as they apply to PARTIAL OR COMPLETE LOSS OF A.C. POWER : Containment isolation																														
REQUIRED MATERIALS:	None																														
Notes and Comments:	This meets the K/A because the student must also know that a loss of 30Y033 also results in closure of RWCU outboard containment isolation valves MO-3-12-18 and MO-3-12-68. This is due to loss of power to the NRHX high outlet temperature relay, which feeds both the inboard and outboard RWCU isolation valve logic.																														

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

59

ID: 994072

Points: 1.00

A transient on Unit 3 has resulted in the following:

- Significant fuel damage has occurred.
- The Reactor Building has become a High Radiation Area (General Area dose rates of 120 mR/hr) and has no current valid Radiation Work Permit (RWP).
- Operations personnel must enter the Reactor Building for one hour to help mitigate the transient.
- No dose extensions are required.

Which one of the following describes the **minimum** requirement for an operator to enter this area in accordance with RP-AA-403, Administration of the Radiation Work Permit Program?

The **minimum** requirement for an operator to enter the area is that they must have...

- A. permission from the Radiation Protection Manager.
- B. coverage by a qualified Radiation Protection Technician.
- C. permission from the Emergency Director after Emergency Plan activation.
- D. an extra Electronic Dosimeter with a dose alarm setpoint less than 500 mRem.

Answer: B

Answer Explanation		
Choice		Basis or Justification
Correct:	B	RP-AA-403 section 4.9 provides guidance for entering an area without a valid RWP during emergency conditions. The procedure requires coverage by a qualified Radiation Protection Technician. Note: The question meets the K/A by presenting a radiation hazard that has arisen during emergency conditions (Reactor Building high radiation) and requiring knowledge of the requirement for entering the area with this radiation hazard still in place.
Distracters:	A	The procedure requires the RPT to notify RP Management as soon as possible, but their permission is not required prior to entry. Plausible because notifying RP supervision is required as soon as possible.
	C	The EDs permission is not required unless a dose extension is required for entry into the High Radiation Area. Plausible because ED permission would be required if an emergency dose extension were necessary.
	D	An electronic dosimeter is required, but not an additional one with a setpoint less than 500 mRem. Plausible because an additional electronic dosimeter does provide extra protection against malfunction, and a 500 mRem dose alarm setpoint is a threshold used in RP-AA-403 for extra risk management.

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

Question 59 Info																																							
Question Type:	Multiple Choice																																						
Status:	Active																																						
Always select on test?	No																																						
Authorized for practice?	No																																						
Points:	1.00																																						
Time to Complete:	2																																						
Difficulty:	1.00																																						
System ID:	994072																																						
User-Defined ID:	B NRC 2019																																						
Cross Reference Number:	295033 EK1.02																																						
Topic:	ILT-1760-4-002 entry into high rad area																																						
Num Field 1:																																							
Num Field 2:	A NRC																																						
Text Field:																																							
Comments:	<table border="1"> <thead> <tr> <th colspan="4">Psychometrics</th> </tr> <tr> <th>Level of Knowledge</th> <th>Difficulty</th> <th>Time Allowance (minutes)</th> <th>RO</th> </tr> </thead> <tbody> <tr> <td>Memory</td> <td></td> <td></td> <td>10CFR55.41(b) (12)</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th colspan="3">Source Documentation</th> </tr> </thead> <tbody> <tr> <td>Source:</td> <td colspan="2"> New Exam item <input checked="" type="checkbox"/> Previous NRC Exam (2017 NRC) <input type="checkbox"/> Modified Bank <input type="checkbox"/> Other Exam Bank <input type="checkbox"/> ILT Exam Bank </td> </tr> <tr> <td>Reference(s):</td> <td colspan="2">RP-AA-403, RP-AA-460</td> </tr> <tr> <td>Learning Objective:</td> <td colspan="2">PLOT-1760 4</td> </tr> <tr> <td>K/A System:</td> <td>295033 - High Secondary Containment Area Radiation Levels</td> <td> Importance; RO / SRO 3.9/ 4.2 </td> </tr> <tr> <td>K/A Statement:</td> <td colspan="2"> EK1.02 - Knowledge of the operational implications of the following concepts as they apply to HIGH SECONDARY CONTAINMENT AREA RADIATION LEVELS : Personnel protection </td> </tr> <tr> <td>REQUIRED MATERIALS:</td> <td colspan="2">NONE</td> </tr> <tr> <td>Notes and Comments:</td> <td colspan="2"></td> </tr> </tbody> </table>			Psychometrics				Level of Knowledge	Difficulty	Time Allowance (minutes)	RO	Memory			10CFR55.41(b) (12)	Source Documentation			Source:	New Exam item <input checked="" type="checkbox"/> Previous NRC Exam (2017 NRC) <input type="checkbox"/> Modified Bank <input type="checkbox"/> Other Exam Bank <input type="checkbox"/> ILT Exam Bank		Reference(s):	RP-AA-403, RP-AA-460		Learning Objective:	PLOT-1760 4		K/A System:	295033 - High Secondary Containment Area Radiation Levels	Importance; RO / SRO 3.9/ 4.2	K/A Statement:	EK1.02 - Knowledge of the operational implications of the following concepts as they apply to HIGH SECONDARY CONTAINMENT AREA RADIATION LEVELS : Personnel protection		REQUIRED MATERIALS:	NONE		Notes and Comments:		
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Reference(s):	RP-AA-403, RP-AA-460																																						
Learning Objective:	PLOT-1760 4																																						
K/A System:	295033 - High Secondary Containment Area Radiation Levels	Importance; RO / SRO 3.9/ 4.2																																					
K/A Statement:	EK1.02 - Knowledge of the operational implications of the following concepts as they apply to HIGH SECONDARY CONTAINMENT AREA RADIATION LEVELS : Personnel protection																																						
REQUIRED MATERIALS:	NONE																																						
Notes and Comments:																																							

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

60

ID: 994764

Points: 1.00

An electric ATWS exists on Unit 2.

The Reactor Operator is directed to perform T-220-2 "Driving Control Rods During a Failure to Scram".

Prior to implementing this procedure, the Rod Worth Minimizer (RWM) loses power.

Which one of the following describes:

- (1) the impact of this power loss on control rod insertion **AND**
 - (2) the action required by T-220-2 to insert control rods?
- A. (1) Control rod insertion is prevented
(2) Bypass the RWM AND place the Rod Control switch (3A-S2) in the "IN" position
 - B. (1) Control rod insertion is prevented
(2) Bypass the RWM AND place the Emergency In / Notch Override switch (3A-S3) in the "EMERG ROD IN" position
 - C. (1) Control rod insertion is NOT prevented
(2) Place the Rod Control switch (3A-S2) in the "IN" position
 - D. (1) Control rod insertion is NOT prevented
(2) Place the Emergency In / Notch Override switch (3A-S3) in the "EMERG ROD IN" position

Answer: B

Answer Explanation		
Correct:	B	A loss of power to the RWM (i.e., hardware/software failure) will result in all rod blocks becoming active, unless the RWM is bypassed. T-220 directs bypassing the RWM (regardless of specific plant conditions) and inserting control rods using the "Emergency In/Notch Override" control switch.
Distractors:	A	T-220 directs inserting control rods using the "Emergency In/Notch Override" control switch.
	C	A loss of power to the RWM will result in all rod blocks becoming active, unless the RWM is bypassed. T-220 directs inserting control rods using the "Emergency In/Notch Override" control switch.
	D	A loss of power to the RWM will result in all rod blocks becoming active, unless the RWM is bypassed. T-220 directs bypassing the RWM (regardless of specific plant conditions).

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

Question 60 Info																																	
Question Type:	Multiple Choice																																
Status:	Active																																
Always select on test?	No																																
Authorized for practice?	No																																
Points:	1.00																																
Time to Complete:	0																																
Difficulty:	1.00																																
System ID:	994764																																
User-Defined ID:	B NRC 2019																																
Cross Reference Number:	295015 K2.05																																
Topic:	ILT-5062A-10A-001 An electrical ATWS exists on Unit 2. The RO is directed to perform T-220-2, "Drive																																
Num Field 1:																																	
Num Field 2:																																	
Text Field:																																	
Comments:	<p>Importance: RO: 2.5 / SRO: 2.8 -001</p> <p>References:</p> <table border="1"> <thead> <tr> <th colspan="4">Psychometrics</th> </tr> <tr> <th>Level of Knowledge</th> <th>Difficulty</th> <th>Time Allowance (minutes)</th> <th>RO</th> </tr> </thead> <tbody> <tr> <td>High</td> <td></td> <td></td> <td>10CRF55.41(b) 10</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th colspan="2">Source Documentation</th> </tr> </thead> <tbody> <tr> <td>Source:</td> <td> <input type="checkbox"/> New Exam item <input type="checkbox"/> Previous NRC Exam <input type="checkbox"/> Modified Bank <input type="checkbox"/> Other Exam Bank <input checked="" type="checkbox"/> ILT Exam Bank </td> </tr> <tr> <td>Reference(s):</td> <td>ARC-211 F-5, SO 62.7.A-2, T-220; M-1-S-20 Sheets 9, 12</td> </tr> <tr> <td>Learning Objective:</td> <td>PLOT-5062A-10A</td> </tr> <tr> <td>K/A System:</td> <td> <table border="1"> <tr> <td>295015 - Incomplete SCRAM</td> <td>Importance; RO / SRO 2.6</td> </tr> </table> </td> </tr> <tr> <td>K/A Statement:</td> <td>K2.05 - Knowledge of the interrelations between Incomplete SCRAM and the following : Rod worth minimizer</td> </tr> <tr> <td>REQUIRED MATERIALS:</td> <td>None</td> </tr> <tr> <td>Notes and Comments:</td> <td>None</td> </tr> </tbody> </table>			Psychometrics				Level of Knowledge	Difficulty	Time Allowance (minutes)	RO	High			10CRF55.41(b) 10	Source Documentation		Source:	<input type="checkbox"/> New Exam item <input type="checkbox"/> Previous NRC Exam <input type="checkbox"/> Modified Bank <input type="checkbox"/> Other Exam Bank <input checked="" type="checkbox"/> ILT Exam Bank	Reference(s):	ARC-211 F-5, SO 62.7.A-2, T-220; M-1-S-20 Sheets 9, 12	Learning Objective:	PLOT-5062A-10A	K/A System:	<table border="1"> <tr> <td>295015 - Incomplete SCRAM</td> <td>Importance; RO / SRO 2.6</td> </tr> </table>	295015 - Incomplete SCRAM	Importance; RO / SRO 2.6	K/A Statement:	K2.05 - Knowledge of the interrelations between Incomplete SCRAM and the following : Rod worth minimizer	REQUIRED MATERIALS:	None	Notes and Comments:	None
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REQUIRED MATERIALS:	None																																
Notes and Comments:	None																																

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

61

ID: 2096854

Points: 1.00

During a high reactor pressure transient on Unit 2, the Plant Reactor Operator notes the following Safety Relief Valve (SRV) indications:

- 11 SRV white lights are illuminated.
- The "C" and "D" SRV red lights are illuminated.
- All other SRV green lights are illuminated.
- No safety valve white lights are illuminated.

Based on the above indications, what was the minimum peak reactor pressure during this transient?

Min. Peak Pressure

- A. 1135 psig
- B. 1155 psig
- C. 1260 psig
- D. 1325 psig

Answer: B

Answer Explanation

Choice		Basis or Justification
Correct:	B	SRV setpoints range from 1135 psig to 1155 psig. If all 11 white memory light are lit, then pressure reached 1155 psig.
Distractors:	A	Plausible as 1135 psig is a lift setpoint of SRV's however only 4 SRV's have this lift setpoint. Therefore if 1135 psig was the peak pressure only 4 SRV's would have the white memory lights lit.
	C	Plausible as 1260 psig is the setpoint for safety valves (not SRV) actuation. Since no safety valve lights are lit, peak pressure did not reach this high.
	D	Plausible as 1325 psig is the reactor coolant system pressure safety limit. Plausible if the candidate does not recall the SRV or SV setpoints as some SRV's and SV's would have to fail in order to reach this peak pressure.

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

Question 61 Info																																															
Question Type:	Multiple Choice																																														
Status:	Active																																														
Always select on test?	No																																														
Authorized for practice?	No																																														
Points:	1.00																																														
Time to Complete:	0																																														
Difficulty:	1.00																																														
System ID:	2096854																																														
User-Defined ID:	B NRC 2019																																														
Cross Reference Number:	295007 K3.04																																														
Topic:	ILT-5001A-3D-006 During a high reactor pressure transient on Unit 2, the Plant Reactor Operator																																														
Num Field 1:																																															
Num Field 2:																																															
Text Field:																																															
Comments:	<table border="1"> <thead> <tr> <th colspan="4">Psychometrics</th> </tr> <tr> <th>Level of Knowledge</th> <th>Difficulty</th> <th>Time Allowance (minutes)</th> <th>RO</th> </tr> </thead> <tbody> <tr> <td>High</td> <td></td> <td></td> <td>10CRF55.41(b) 8</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th colspan="4">Source Documentation</th> </tr> </thead> <tbody> <tr> <td>Source:</td> <td colspan="3"> <input type="checkbox"/> New Exam item <input type="checkbox"/> Previous NRC Exam <input type="checkbox"/> Modified Bank <input type="checkbox"/> Other Exam Bank <input checked="" type="checkbox"/> ILT Exam Bank </td> </tr> <tr> <td>Reference(s):</td> <td colspan="3">Tech. Spec. 3.4.3</td> </tr> <tr> <td>Learning Objective:</td> <td colspan="3">PLOT-5001A-3D</td> </tr> <tr> <td>K/A System:</td> <td>295007 - High Reactor Pressure</td> <td>Importance;</td> <td>RO / SRO 4.0/4.1</td> </tr> <tr> <td>K/A Statement:</td> <td colspan="3">K304 - Knowledge of the reason for the following responses as they apply to High Reactor Pressure: Safety/relief valve operation</td> </tr> <tr> <td>REQUIRED MATERIALS:</td> <td colspan="3">None</td> </tr> <tr> <td>Notes and Comments:</td> <td colspan="3">None</td> </tr> </tbody> </table>			Psychometrics				Level of Knowledge	Difficulty	Time Allowance (minutes)	RO	High			10CRF55.41(b) 8	Source Documentation				Source:	<input type="checkbox"/> New Exam item <input type="checkbox"/> Previous NRC Exam <input type="checkbox"/> Modified Bank <input type="checkbox"/> Other Exam Bank <input checked="" type="checkbox"/> ILT Exam Bank			Reference(s):	Tech. Spec. 3.4.3			Learning Objective:	PLOT-5001A-3D			K/A System:	295007 - High Reactor Pressure	Importance;	RO / SRO 4.0/4.1	K/A Statement:	K304 - Knowledge of the reason for the following responses as they apply to High Reactor Pressure: Safety/relief valve operation			REQUIRED MATERIALS:	None			Notes and Comments:	None		
Psychometrics																																															
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K/A System:	295007 - High Reactor Pressure	Importance;	RO / SRO 4.0/4.1																																												
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REQUIRED MATERIALS:	None																																														
Notes and Comments:	None																																														

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

62

ID: 994070

Points: 1.00

The following alarms are received on Unit 2:

- 2 VENT STACK RAD MONITOR HI TROUBLE A (218 B-5)
- 2 VENT STACK RAD MONITOR HI TROUBLE B (218 C-5)

In accordance with ON-104, 'Vent Stack High Radiation', which radiation monitor must be checked to help determine the source of the high radiation?

- A. PERL Building
- B. Radwaste Building
- C. Steam Packing Exhauster
- D. Offgas Recombiner Room

Answer: B

Answer Explanation

Choice		Basis or Justification
Correct:	B	IAW ON-104, if the Unit 2 Vent Stack Radiation is high, the Radwaste Building exhaust radiation monitor should be checked.
Distractors:	A	The PERL Building exhausts to the Unit 3 Vent Stack. Plausible if the candidate does not understand the alignment of the stations ventilation system.
	C	The Steam Packing Exhauster exhausts to the Main Stack. Plausible if the candidate does not understand the alignment of the stations ventilation system.
	D	Offgas Recombiner Room exhausts to the Unit 3 Vent Stack. Plausible if the candidate does not understand the alignment of the stations ventilation system.

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

Question 62 Info																																															
Question Type:	Multiple Choice																																														
Status:	Active																																														
Always select on test?	No																																														
Authorized for practice?	No																																														
Points:	1.00																																														
Time to Complete:	0																																														
Difficulty:	0.00																																														
System ID:	994070																																														
User-Defined ID:	B NRC 2019																																														
Cross Reference Number:	295017A101																																														
Topic:	ILT-1550-1-002 ON-104 execution																																														
Num Field 1:																																															
Num Field 2:	NA																																														
Text Field:																																															
Comments:	<table border="1"> <thead> <tr> <th colspan="4">Psychometrics</th> </tr> <tr> <th>Level of Knowledge</th> <th>Difficulty</th> <th>Time Allowance (minutes)</th> <th>RO</th> </tr> </thead> <tbody> <tr> <td>Memory</td> <td></td> <td></td> <td>10CRF55.41(b) 10</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th colspan="4">Source Documentation</th> </tr> </thead> <tbody> <tr> <td>Source:</td> <td colspan="3"> <div> <input type="checkbox"/> New Exam item <input type="checkbox"/> Previous NRC Exam </div> <div> <input type="checkbox"/> Modified Bank <input type="checkbox"/> Other Exam Bank <input checked="" type="checkbox"/> ILT Exam Bank </div> </td> </tr> <tr> <td>Reference(s):</td> <td colspan="3">ON-104</td> </tr> <tr> <td>Learning Objective:</td> <td colspan="3">PLOT -1550-1</td> </tr> <tr> <td>K/A System:</td> <td>295017 - High Off-site Release Rate</td> <td>Importance;</td> <td>RO 2.7</td> </tr> <tr> <td>K/A Statement:</td> <td colspan="3">A101 - Ability to operate and or monitor the following as they apply to High Off-site Release Rate: Radwaste</td> </tr> <tr> <td>REQUIRED MATERIALS:</td> <td colspan="3">None</td> </tr> <tr> <td>Notes and Comments:</td> <td colspan="3">None</td> </tr> </tbody> </table>			Psychometrics				Level of Knowledge	Difficulty	Time Allowance (minutes)	RO	Memory			10CRF55.41(b) 10	Source Documentation				Source:	<div> <input type="checkbox"/> New Exam item <input type="checkbox"/> Previous NRC Exam </div> <div> <input type="checkbox"/> Modified Bank <input type="checkbox"/> Other Exam Bank <input checked="" type="checkbox"/> ILT Exam Bank </div>			Reference(s):	ON-104			Learning Objective:	PLOT -1550-1			K/A System:	295017 - High Off-site Release Rate	Importance;	RO 2.7	K/A Statement:	A101 - Ability to operate and or monitor the following as they apply to High Off-site Release Rate: Radwaste			REQUIRED MATERIALS:	None			Notes and Comments:	None		
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REQUIRED MATERIALS:	None																																														
Notes and Comments:	None																																														

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

63

ID: 2084252

Points: 1.00

The order ADS valves are manually opened is __ (1) __? This is done to __ (2) __.

- A. (1) A, B, C, G, K
(2) evenly distribute heat into the Torus
- B. (1) A, B, C, G, K
(2) prevent opening Torus to Drywell vacuum breakers
- C. (1) A, B, K, C, G
(2) evenly distribute heat into the Torus
- D. (1) A, B, K, C, G
(2) prevent opening Torus to Drywell vacuum breakers

Answer: C

Answer Explanation

Choice		Basis or Justification
Correct:	C	RRC 1G.2 directs the operator to "When opening multiple relief valves, consideration should be given to even heat distribution in the Torus." Above the ADS valves is a tag that directs the opening sequence.
Distractors:	A	Plausible if the candidate does not remember the opening sequence. ABCGK is the order given in the memory aid used to remember which SRVs are ADS valves. Correct reason is given.
	B	Plausible if the candidate does not remember the opening sequence. ABCGK is the order given in the memory aid used to remember which SRVs are ADS valves. Plausible if the candidate believes that opening a Vacuum breaker is an issue. An open vacuum breaker is only an issue if the valve does not reset.
	D	Opening sequence is correct. Plausible if the candidate believes that opening a Vacuum breaker is an issue. An open vacuum breaker is only an issue if the valve does not reset.

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

Question 63 Info																																							
Question Type:	Multiple Choice																																						
Status:	Active																																						
Always select on test?	No																																						
Authorized for practice?	No																																						
Points:	1.00																																						
Time to Complete:	0																																						
Difficulty:	0.00																																						
System ID:	2084252																																						
User-Defined ID:	B NRC 2019																																						
Cross Reference Number:	295013 A2.02																																						
Topic:	ILT - 5001A-9c. For identified procedures associated with the Main Steam and Pressure Relief																																						
Num Field 1:																																							
Num Field 2:																																							
Text Field:																																							
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EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

64

ID: 994790

Points: 1.00

Unit 2 is operating at 100% power when Drywell pressure began to rise. The crew entered OT-101 "High Drywell Pressure".

At 1.2 psig Drywell pressure the crew performed a GP-4 "Manual Reactor Scram".

The following conditions currently exist:

- RPV level lowered to -15 inches and is now 20 inches and steady
- Drywell pressure is 1.5 psig and slowly rising
- All PRO and URO scram actions have been completed
- No other actions have been performed

Which one of the following is the pneumatic supply to the ADS valves under these conditions?

- A. Backup Instrument Air Supply
- B. Backup Instrument Nitrogen bottles
- C. Backup Instrument Nitrogen from CAD
- D. Instrument Nitrogen Compressors "A" and/or "B"

Answer: A

Answer Explanation		
Correct:	A	Based on the given conditions, a Group II/III isolation signal occurred due to low RPV level (-1 inch). This results in an isolation of the N2 compressor suction valves and the N2 receiver supply to the A and B drywell headers. Since all PRO scram actions are complete, the A and B drywell header isolation valves have been bypassed and reopened per RRC 94.2-2, aligning the N2 receivers to drywell loads. As N2 receiver pressure lowers to 85 psig, the Backup Instrument Air isolation valves will automatically open to re-pressurize the receivers and supply drywell pneumatic loads.
Distractors:	B	Plausible as the Backup Instrument Nitrogen from N2 bottles to ADS SRVs is permitted from T-101 "RPV Control" however, only if specifically directed to be aligned (not part of the URO or PRO scram actions).
	C	Plausible as Backup Instrument Nitrogen from CAD is permitted in T-101 "RPV Control". However this takes manual action from both the control room and outside the control room.
	D	Plausible as N2 compressors are the normal source to the ADS valves, however N2 compressors A and B tripped due to the loss of suction generated by the Group III isolation signal (-1 inch).

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

Question 64 Info																																															
Question Type:	Multiple Choice																																														
Status:	Active																																														
Always select on test?	No																																														
Authorized for practice?	No																																														
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Difficulty:	2.00																																														
System ID:	994790																																														
User-Defined ID:	B NRC 2019																																														
Cross Reference Number:	295010 AK2.04																																														
Topic:	ILT-5016-3A-003 Unit 2 was operating at 100% power when Drywell pressure began to rise. The crew																																														
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EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

65

ID: 2083986

Points: 1.00

Unit 2 is operating at full power when the following transient occurs:

- 'B' Reactor Feedwater Pump trips.
- RPV level is +15 inches and dropping slowly.
- Reactor Power is 100% and steady.

Based on these plant conditions, the Reactor Operator must immediately:

- A. place the Reactor Mode Switch in SHUTDOWN using GP-4, Manual Reactor Scram.
- B. lower reactor power until water level is stabilized using GP-5, Power Operations.
- C. verify or run both Recirculation Pumps back to 30% speed.
- D. verify or run both Recirculation Pumps back to 45% speed.

Answer: D

Answer Explanation		
Choice	Basis or Justification	
Correct:	D	ARC-210 H-2 says that a 45% runback should have occurred for these conditions. The operators must verify expected automatic actions.
Distractors:	A	There are several actions to take before a Scram would be required. Plausible because OT-100 does address scram conditions.
	B	Lowering power is a required immediate operator action, however, GP-9 is the required procedure not GP-5. GP-9 is used for a Fast power reduction, GP-5 is used for normal power operations. Plausible if the candidate doesn't recall the correct procedure to lower power and GP-5 is a procedure that will lower power.
	C	Plausible if the candidate believes that a 30% runback should have occurred. A 30% runback occurs for several reasons, however this situation is not one of them.

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

Question 65 Info																																							
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System ID:	2083986																																						
User-Defined ID:	B NRC 2019																																						
Cross Reference Number:	295009 2.1.7																																						
Topic:	ILT-1540-3-012 OT-100																																						
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Num Field 2:	NA																																						
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Notes and Comments:	None																																						

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

66

ID: 993705

Points: 1.00

Which one of the following identifies the basis for ensuring HPCI discharge pressure is approximately 100 psi greater than reactor pressure when injecting into the vessel per SO 23.1.B-2, HPCI System Manual Operation?

This action minimizes.....

- A. the amount of time that HPCI pump speed is less than 2200 RPM to prevent damage due to low oil flow.
- B. cycling of the discharge check valve and resultant water hammer in the HPCI discharge piping.
- C. the time that the HPCI minimum flow valve is open to prevent loss of CST inventory to the torus.
- D. unwanted Aux oil pump starts due to low oil pressure.

Answer: B

Answer Explanation		
Choice	Basis or Justification	
Correct:	B	AO-2-23-018 must be maintained open by ensuring HPCI pump discharge pressure is approximately 100 psi greater than Reactor pressure at all times during vessel injection. Otherwise, there is a potential for check valve cycling, flow oscillations and water hammer.
Distract ors:	A	Plausible because there is a limit of 2200 rpm but it does not apply to maintaining 100 psid between Reactor pressure and pump discharge pressure.
	C	Plausible because there is a concern about pumping water to the Torus it does not apply to maintaining 100 psid between Reactor pressure and pump discharge pressure.
	D	Plausible because there is a concern about low oil pressure and starting the Aux oil pump but it does not apply to maintaining 100 psid between Reactor pressure and pump discharge pressure.

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

Question 66 Info																																			
Question Type:	Multiple Choice																																		
Status:	Active																																		
Always select on test?	No																																		
Authorized for practice?	No																																		
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Difficulty:	0.00																																		
System ID:	993705																																		
User-Defined ID:	B NRC 2019																																		
Cross Reference Number:	2.1.32																																		
Topic:	ILT-5023-4f-001 Split flow Water Hammer																																		
Num Field 1:	N/A																																		
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EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

67

ID: 994016

Points: 1.00

The Work Execution Reactor Operator has directed an Equipment Operator to perform a task which requires the Shift Management Master Security / SE-10 Key.

Which one of the following identifies the requirements per station key control procedures?

In order to obtain the key, in accordance with OP-PB-108-101-1006 "Operations Key Control", the RO must at a minimum:

	Be issued the key from:	With verbal permission from:
A.	Work Execution Reactor Operator	Control Room Supervisor
B.	Work Execution Reactor Operator	Shift Manager
C.	Work Execution Control Supervisor	Control Room Supervisor
D.	Work Execution Control Supervisor	Shift Manager

Answer: D

Answer Explanation		
Answer Explanation		
Correct:	D	The Shift Management Master Security / SE-10 Key is only found in the Shift Managers Key Cabinet. IAW OP-PB-108-101-1006 step 3.1.1 Only the Shift Manager may issue keys from, or receive returned keys for, the Shift Manager Key Cabinets. The Shift Manager's verbal permission is required if another member of Shift Management issues these keys.
Distracters:	A	Plausible as the RO could issue keys with the CRS permission, but only if the key was from the Shift Supervisor Key Cabinet.
	B	Plausible as the Shift Managers verbal permission is required to issue the key, however the procedure states that another member of Shift Management must issue the key. Therefore it cannot be issued by the RO.
	C	Plausible as the WECS could issue a key from the Shift Supervisor Key Cabinet and would confer with the Control Room Supervisor on any work being performed. However verbal permission needs to be granted from the Shift Manager in order to obtain a key from the Shift Manager Key Cabinet.

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

Question 67 Info																															
Question Type:	Multiple Choice																														
Status:	Active																														
Always select on test?	No																														
Authorized for practice?	No																														
Points:	1.00																														
Time to Complete:	2																														
Difficulty:	1.00																														
System ID:	994016																														
User-Defined ID:	B NRC 2019																														
Cross Reference Number:	2.1.8																														
Topic:	ILT-1529-1d-003 SM Key Cabinet - key control																														
Num Field 1:																															
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Notes and Comments:	None																														

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

68

ID: 1649514

Points: 1.00

A Unit 2 startup is in progress in accordance with GP-2-2, Normal Plant Start-up. Control rods are being withdrawn to achieve criticality.

Which one of the following describes:

(1) the WRNM count rate at which continuous control rod withdrawal **first** becomes restricted

AND

(2) the associated restriction, in accordance with GP-2-2?

Note: Assume NO other specific direction has been given by Reactor Engineering.

- A. (1) Two doublings
(2) Notch withdrawal required at all positions from 00 to 48.
- B. (1) Two doublings
(2) Notch withdrawal required only at positions from 04 to 36.
- C. (1) Three doublings
(2) Notch withdrawal required from position 00 to position 48.
- D. (1) Three doublings
(2) Notch withdrawal required only at positions from 04 to 36.

Answer: D

Answer Explanation		
Choice		Basis or Justification
Correct:	D	GP-2 cautions require, prior to criticality, when the count rate on WRNM exceeds three doublings, all rods be notch withdrawn from position 04 to 36. Continuous withdrawal is specifically allowed from 00 to 04 to allow double clutching. Continuous withdrawal is specifically allowed from 36 to 48 due to low rod worth.
Distracters:	A	GP-2 restricts continuous withdrawal after three doublings, not two. Plausible because two doublings is a significant rise in power and near the correct answer. GP-2 only restricts continuous withdrawal from positions 04 to 36. Plausible because most rod positions are restricted and high worth could be found in other regions.
	B	GP-2 restricts continuous withdrawal after three doublings, not two. Plausible because two doublings is a significant rise in power and near the correct answer.
	C	GP-2 only restricts continuous withdrawal from positions 04 to 36. Plausible because most rod positions are restricted and high worth could be found in other regions.

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

Question 68 Info																															
Question Type:	Multiple Choice																														
Status:	Active																														
Always select on test?	No																														
Authorized for practice?	No																														
Points:	1.00																														
Time to Complete:	0																														
Difficulty:	0.00																														
System ID:	1649514																														
User-Defined ID:	B NRC 2019																														
Cross Reference Number:	2.2.1																														
Topic:	GP-2 restriction on continuous rod withdrawal																														
Num Field 1:																															
Num Field 2:	A NRC																														
Text Field:																															
Comments:	<table border="1"> <thead> <tr> <th colspan="4">Psychometrics</th> </tr> <tr> <th>Level of Knowledge</th> <th>Difficulty</th> <th>Time Allowance (minutes)</th> <th>RO</th> </tr> </thead> <tbody> <tr> <td>Memory</td> <td></td> <td></td> <td>10CFR55.41(b) (10)</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th colspan="2">Source Documentation</th> </tr> </thead> <tbody> <tr> <td>Source:</td> <td> <div> <input type="checkbox"/> New Exam item <input checked="" type="checkbox"/> Previous NRC Exam (2017 NRC) <input type="checkbox"/> Modified Bank <input type="checkbox"/> Other Exam Bank <input type="checkbox"/> ILT Exam Bank </div> </td> </tr> <tr> <td>Reference(s):</td> <td>GP-2</td> </tr> <tr> <td>Learning Objective:</td> <td>PLOT-DBIG-1536 4</td> </tr> <tr> <td>K/A System:</td> <td> <div> Importance; RO 4.5 </div> </td> </tr> <tr> <td>K/A Statement:</td> <td>2.2.1 - Ability to perform pre-startup procedures for the facility, including operating those controls associated with plant equipment that could affect reactivity</td> </tr> <tr> <td>REQUIRED MATERIALS:</td> <td>NONE</td> </tr> <tr> <td>Notes and Comments:</td> <td></td> </tr> </tbody> </table>			Psychometrics				Level of Knowledge	Difficulty	Time Allowance (minutes)	RO	Memory			10CFR55.41(b) (10)	Source Documentation		Source:	<div> <input type="checkbox"/> New Exam item <input checked="" type="checkbox"/> Previous NRC Exam (2017 NRC) <input type="checkbox"/> Modified Bank <input type="checkbox"/> Other Exam Bank <input type="checkbox"/> ILT Exam Bank </div>	Reference(s):	GP-2	Learning Objective:	PLOT-DBIG-1536 4	K/A System:	<div> Importance; RO 4.5 </div>	K/A Statement:	2.2.1 - Ability to perform pre-startup procedures for the facility, including operating those controls associated with plant equipment that could affect reactivity	REQUIRED MATERIALS:	NONE	Notes and Comments:	
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REQUIRED MATERIALS:	NONE																														
Notes and Comments:																															

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

69

ID: 993857

Points: 1.00

A startup is in progress on Unit 2:

- Reactor Power is 5%
- URO reports that Reactor Steam Dome Pressure has risen and is now 1065 psig and stable.

Which of the following describes the required minimum action based on the URO's report?

Reactor Steam Dome pressure must be reduced to less than ...

- A. 1053 psig within the next 15 minutes.
- B. 1053 psig within the next hour.
- C. 1035 psig within the next 15 minutes.
- D. 1035 psig within the next hour.

Answer: A

Answer Explanation

Choice		Basis or Justification
Correct:	A	This is the direction in Tech Spec section. Verify reactor steam dome pressure is \leq 1053 psig and restore reactor steam dome pressure to within limit with a completion time of 15 minutes.
Distractors	B	Plausible if the candidate does not recall the time and thinks that the action has an hour requirement. Plausible as there are many 1 hour Tech Spec requirements.
	C	There is a limit for values above 1035 but the time requirement is 2 hours this makes 1035 a plausible distractor. These numbers are based out of OT-102 "Reactor High Pressure"
	D	There is a limit for values above 1035 but the time requirement is 2 hours this makes 1035 a plausible distractor. These numbers are based out of OT-102 "Reactor High Pressure"

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

Question 69 Info																															
Question Type:	Multiple Choice																														
Status:	Active																														
Always select on test?	No																														
Authorized for practice?	No																														
Points:	1.00																														
Time to Complete:	0																														
Difficulty:	0.00																														
System ID:	993857																														
User-Defined ID:	B NRC 2019																														
Cross Reference Number:	2.2.39																														
Topic:	ILT-1540-3-007 OT-102 TS Required Action for High Pressure																														
Num Field 1:																															
Num Field 2:	N/A																														
Text Field:																															
Comments:	<table border="1"> <thead> <tr> <th colspan="4">Psychometrics</th> </tr> <tr> <th>Level of Knowledge</th> <th>Difficulty</th> <th>Time Allowance (minutes)</th> <th>RO</th> </tr> </thead> <tbody> <tr> <td>Memory</td> <td></td> <td></td> <td>10CRF55.41(b) 10</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th colspan="2">Source Documentation</th> </tr> </thead> <tbody> <tr> <td>Source:</td> <td> <div> <div>New Exam item</div> <div>Modified Bank</div> <div>Bank</div> <div><input checked="" type="checkbox"/> ILT Exam Bank</div> </div> <div>Previous NRC Exam</div> <div>Other Exam</div> </td> </tr> <tr> <td>Reference(s):</td> <td>OT-102 and Bases. TS 3.4.10</td> </tr> <tr> <td>Learning Objective:</td> <td>PLOT - 1540 -3</td> </tr> <tr> <td>K/A System:</td> <td> <div>Importance; RO / SRO</div> <div>3.9</div> </td> </tr> <tr> <td>K/A Statement:</td> <td>2.2.39 - Knowledge of less than or equal to one hour Technical Specification action statement for systems</td> </tr> <tr> <td>REQUIRED MATERIALS:</td> <td>None</td> </tr> <tr> <td>Notes and Comments:</td> <td>None</td> </tr> </tbody> </table>			Psychometrics				Level of Knowledge	Difficulty	Time Allowance (minutes)	RO	Memory			10CRF55.41(b) 10	Source Documentation		Source:	<div> <div>New Exam item</div> <div>Modified Bank</div> <div>Bank</div> <div><input checked="" type="checkbox"/> ILT Exam Bank</div> </div> <div>Previous NRC Exam</div> <div>Other Exam</div>	Reference(s):	OT-102 and Bases. TS 3.4.10	Learning Objective:	PLOT - 1540 -3	K/A System:	<div>Importance; RO / SRO</div> <div>3.9</div>	K/A Statement:	2.2.39 - Knowledge of less than or equal to one hour Technical Specification action statement for systems	REQUIRED MATERIALS:	None	Notes and Comments:	None
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REQUIRED MATERIALS:	None																														
Notes and Comments:	None																														

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

70

ID: 993781

Points: 1.00

Select from the vent paths listed, the containment vent path that would result in an unscrubbed, unmonitored, and untreated radioactive release to the environment per the TRIP venting procedures.

Venting the containment via the.....

- A. 6 inch ILRT Drywell vent path.
- B. 6 inch Torus ILRT vent path.
- C. 16 inch Torus Hardened vent path.
- D. 18 inch Drywell vent path.

Answer: A

Answer Explanation		
Choice		Basis or Justification
Correct:	A	This vent path is direct from DW without going through scrubbing in the torus or filtered by SBTG and is not monitored. [T-200F]
Distracters:	B	Plausible as this is one of the vent paths described in T-200 "Primary Containment Venting". This vent path however takes advantage of Torus scrubbing, which limits radioactivity release. [T-200C]
	C	Plausible as this is one of the vent paths described in T-200 "Primary Containment Venting". This vent path however takes advantage of Torus scrubbing, which limits radioactivity release. This vent path is also monitored with RI-81405. [T-200J]
	D	Plausible as this is one of the vent paths described in T-200 "Primary Containment Venting". This vent path however takes advantage of being treated through SBTG. [T-200G]

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

Question 70 Info																															
Question Type:	Multiple Choice																														
Status:	Active																														
Always select on test?	No																														
Authorized for practice?	No																														
Points:	1.00																														
Time to Complete:	2																														
Difficulty:	1.00																														
System ID:	993781																														
User-Defined ID:	B NRC 2019																														
Cross Reference Number:	2.3.14																														
Topic:	ILT-2102-7B-001 T-200 Vent Path																														
Num Field 1:																															
Num Field 2:																															
Text Field:	A																														
Comments:	<table border="1"> <thead> <tr> <th colspan="4">Psychometrics</th> </tr> <tr> <th>Level of Knowledge</th> <th>Difficulty</th> <th>Time Allowance (minutes)</th> <th>SRO</th> </tr> </thead> <tbody> <tr> <td>Memory</td> <td></td> <td></td> <td>10CFR55.41(b) (13)</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th colspan="2">Source Documentation</th> </tr> </thead> <tbody> <tr> <td>Source:</td> <td> <div> <div>New Exam item</div> <div>Modified Bank</div> <div>Bank</div> <div><input checked="" type="checkbox"/> ILT Exam Bank</div> </div> <div>Previous NRC Exam</div> <div>Other Exam</div> </td> </tr> <tr> <td>Reference(s):</td> <td>T-102 bases, T-200, 200C, 200F, 200G, 200J</td> </tr> <tr> <td>Learning Objective:</td> <td>PLOT-2102 7b</td> </tr> <tr> <td>K/A System:</td> <td> <div>Importance;</div> <div>RO /</div> <div>SRO</div> <div>3.4 / 3.8</div> </td> </tr> <tr> <td>K/A Statement:</td> <td>2.3.14 – Knowledge of radiation or contamination hazards that may arise during normal, abnormal, or emergency conditions or activities.</td> </tr> <tr> <td>REQUIRED MATERIALS:</td> <td>NONE</td> </tr> <tr> <td>Notes and Comments:</td> <td>This fits the generic K/A as no specific system is used. The examinee must have knowledge of the radiation hazards that will arise depending on which vent path is used during emergency venting.</td> </tr> </tbody> </table>			Psychometrics				Level of Knowledge	Difficulty	Time Allowance (minutes)	SRO	Memory			10CFR55.41(b) (13)	Source Documentation		Source:	<div> <div>New Exam item</div> <div>Modified Bank</div> <div>Bank</div> <div><input checked="" type="checkbox"/> ILT Exam Bank</div> </div> <div>Previous NRC Exam</div> <div>Other Exam</div>	Reference(s):	T-102 bases, T-200, 200C, 200F, 200G, 200J	Learning Objective:	PLOT-2102 7b	K/A System:	<div>Importance;</div> <div>RO /</div> <div>SRO</div> <div>3.4 / 3.8</div>	K/A Statement:	2.3.14 – Knowledge of radiation or contamination hazards that may arise during normal, abnormal, or emergency conditions or activities.	REQUIRED MATERIALS:	NONE	Notes and Comments:	This fits the generic K/A as no specific system is used. The examinee must have knowledge of the radiation hazards that will arise depending on which vent path is used during emergency venting.
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EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

71

ID: 2105998

Points: 1.00

Unit 2 is operating at 100% power

- Two Area Rad Monitors (ARM) alarm simultaneously

Upon investigation the operator observes the following:

ARM #1 in alarm has the following indications:

- a white label
- orange (high) light is lit
- reading high and on scale

ARM #2 in alarm has the following indications:

- a blue label
- white (low) light is lit
- reading is pegged low

Which one of the following requires entry into T-103 "Secondary Containment Control"?

- A. ARM #1 ONLY
- B. ARM #2 ONLY
- C. BOTH ARM #1 AND ARM #2
- D. NEITHER ARM #1 NOR ARM #2

Answer: D

Answer Explanation		
Choice		Basis or Justification
Correct:	D	Both ARM's are in alarm, however ARM #1, even though it has a valid high alarm, has a white label and ARC-003 B-1 states that blue labeled ARM's are T-103 entries. ARM #2 has a blue label, however the alarm is downscale and the T-103 entry is for ARM's above an alarm level.
Distractor s:	A	Plausible because a high ARM alarm is a T-103 entry. ARM #1, even though it has a valid high alarm, has a white label and ARC-003 B-1 states that blue labeled ARM's are T-103 entries.
	B	Plausible because a blue labeled ARM is a T-103 entry. ARM #2 has a blue label, however the alarm is downscale and the T-103 entry is for ARM's above an alarm level.
	C	Plausible if candidate misdiagnoses the indications and believes both ARM alarms are entry conditions into T-103.

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

Question 71 Info																																															
Question Type:	Multiple Choice																																														
Status:	Active																																														
Always select on test?	No																																														
Authorized for practice?	No																																														
Points:	1.00																																														
Time to Complete:	3																																														
Difficulty:	2.00																																														
System ID:	2105998																																														
User-Defined ID:	B NRC 2019																																														
Cross Reference Number:	2.3.5																																														
Topic:	PLOT-5063C-9-001 B NRC 2019																																														
Num Field 1:																																															
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Comments:	<table border="1"> <thead> <tr> <th colspan="4">Psychometrics</th> </tr> <tr> <th>Level of Knowledge</th> <th>Difficulty</th> <th>Time Allowance (minutes)</th> <th>RO</th> </tr> </thead> <tbody> <tr> <td>MEMORY</td> <td></td> <td></td> <td>10CRF55.41(b)(11)</td> </tr> <tr> <th colspan="4">Source Documentation</th> </tr> <tr> <td>Source:</td> <td colspan="3"> <input checked="" type="checkbox"/> New Exam item <input type="checkbox"/> Modified Bank <input type="checkbox"/> Previous NRC Exam <input type="checkbox"/> Other Exam Bank <input type="checkbox"/> ILT Exam Bank </td> </tr> <tr> <td>Reference(s):</td> <td colspan="3">T-103, ARC-003 B-1, ARC-003 B-5</td> </tr> <tr> <td>Learning Objective:</td> <td colspan="3">PLOT-5063C-9</td> </tr> <tr> <td>K/A System:</td> <td>2.3 Radiation Control</td> <td colspan="2">Importance: RO / SRO 2.9/ 2.9</td> </tr> <tr> <td>K/A Statement:</td> <td colspan="3">2.3.5 - Ability to use radiation monitoring systems, such as fixed radiation monitors and alarms, portable survey instruments, personnel monitoring equipment, etc.</td> </tr> <tr> <td>REQUIRED MATERIALS:</td> <td colspan="3">None</td> </tr> <tr> <td>Notes and Comments:</td> <td colspan="3">None</td> </tr> </tbody> </table>			Psychometrics				Level of Knowledge	Difficulty	Time Allowance (minutes)	RO	MEMORY			10CRF55.41(b)(11)	Source Documentation				Source:	<input checked="" type="checkbox"/> New Exam item <input type="checkbox"/> Modified Bank <input type="checkbox"/> Previous NRC Exam <input type="checkbox"/> Other Exam Bank <input type="checkbox"/> ILT Exam Bank			Reference(s):	T-103, ARC-003 B-1, ARC-003 B-5			Learning Objective:	PLOT-5063C-9			K/A System:	2.3 Radiation Control	Importance: RO / SRO 2.9/ 2.9		K/A Statement:	2.3.5 - Ability to use radiation monitoring systems, such as fixed radiation monitors and alarms, portable survey instruments, personnel monitoring equipment, etc.			REQUIRED MATERIALS:	None			Notes and Comments:	None		
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REQUIRED MATERIALS:	None																																														
Notes and Comments:	None																																														

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

72

ID: 2086296

Points: 1.00

During an emergency condition at PBAPS, in accordance with station emergency plan procedures which one of the following identifies

(1) the declaration level when accountability of station personnel within the Protected Area must be directed **AND**

(2) the time at which it must be completed?

- A. (1) Site Area Emergency and above
(2) 15 minutes
- B. (1) Site Area Emergency and above
(2) 30 minutes
- C. (1) General Emergency ONLY
(2) 15 minutes
- D. (1) General Emergency ONLY
(2) 30 minutes

Answer: B

Answer Explanation

Choice		Basis or Justification
Correct:	B	EP-AA-113, directs accountability be conducted for SAE and GE. The time to complete this accountability is 30 minutes
Distractors:	A	Declaration is correct 15 minutes is Plausible as this is the time limit for both making the declaration and then reporting to state and local agencies.
	C	Plausible as a PAR is only determined at GE level, accountability is also performed at a Site Area Emergency. 15 minutes is Plausible as this is the time limit for both making the declaration and then reporting to state and local agencies.
	D	Plausible as a PAR is only determined at GE level, accountability is also performed at a Site Area Emergency. 30 minutes is the correct time to complete accountability

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

Question 72 Info																																															
Question Type:	Multiple Choice																																														
Status:	Active																																														
Always select on test?	No																																														
Authorized for practice?	No																																														
Points:	1.00																																														
Time to Complete:	1																																														
Difficulty:	1.00																																														
System ID:	2086296																																														
User-Defined ID:	B NRC 2019																																														
Cross Reference Number:	2.4.29																																														
Topic:	ILT-G5-4-007 Accountability																																														
Num Field 1:																																															
Num Field 2:	N/A																																														
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Learning Objective:	PLOT G5-4																																														
K/A System:		Importance; SRO	RO / 3.1																																												
K/A Statement:	2.4.29 - Knowledge of the emergency plan																																														
REQUIRED MATERIALS:	None																																														
Notes and Comments:	None																																														

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

73

ID: 2096842

Points: 1.00

The crew has entered and is executing SE-16, "Grid Emergency".

- The station can not provide the requested generator output.

Per SE-16 the Crew shall contact _____.

- A. contact the Generator Dispatch (only)
- B. contact the Transmission System Operator (only)
- C. contact both Generator Dispatch and Transmission System Operator (only)
- D. contact both Generator Dispatch, Transmission System Operator and FERC

Answer: C

Answer Explanation

Choice		Basis or Justification
Correct	C	SE-16 directs that both the TSO and Generation Dispatch be notified if there are issues with MEGAWATTS or MEGAVARS. The note in SE-16 says, "PBAPS is required to comply with Generation Dispatch/TSO generation requests except when nuclear, equipment OR personnel safety is concerned."
Distractors:	A	Contacting the Generation Dispatch is part of a correct answer. Plausible if the candidate does not recall that both the Generation Dispatch and the TSO must be contacted.
	B	Contacting the TSO is part of a correct answer. Plausible if the candidate does not recall that both the Generator Dispatch and the TSO must be contacted also if the candidate confuses this direction with the direction requiring contacting the TSO if a plant shutdown is required.
	D	Plausible if the candidate believes that FERC will be contacted per SE-16. FERC will be contacted but not during the emergency and not by the Reactor Operator.

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

Question 73 Info																																
Question Type:	Multiple Choice																															
Status:	Active																															
Always select on test?	No																															
Authorized for practice?	No																															
Points:	1.00																															
Time to Complete:	0																															
Difficulty:	0.00																															
System ID:	2096842																															
User-Defined ID:	B NRC 2019																															
Cross Reference Number:	2.4.30																															
Topic:	ILT-1555-3-029 SE-16.																															
Num Field 1:																																
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REQUIRED MATERIALS:	None																															
Notes and Comments:	None																															

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

74

ID: 2079067

Points: 1.00

Unit 2 is at 100% power:

- 1010....Unit 2 Turbine Building 116' Elevation fire alarm is received.
- 1012....Incident Commander (IC) responds to the scene with Member #1.
- 1015....IC reports that an actual fire exists on Turbine Building 116'.
- 1020....IC reports that onsite Fire Brigade is fighting the fire.
- 1030....IC reports that the fire is not yet under control and fire fighting is still in progress.

In accordance with FF-01 "Fire Brigade" and ON-114 "Actual Fire Reported in the Power Block, Diesel Generator Building, Emergency Pump, Inner Screen or Emergency Cooling Tower Structures"

The Control Room is required to notify the Incident Commander of time that has expired to call off-site assistance at (1) unless Incident Commander provides additional information to mitigate the need for off-site assistance

When off-site assistance is called the control room will perform (2).

- A. (1) 1030
(2) GP-4 "Manual Reactor Scram"
- B. (1) 1035
(2) GP-4 "Manual Reactor Scram"
- C. (1) 1030
(2) GP-3-2 "Normal Plant Shutdown"
- D. (1) 1035
(2) GP-3-2 "Normal Plant Shutdown"

Answer: C

Answer Explanation

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

Choice		Basis or Justification
Correct:	C	<p>FF-01 states that if the Incident Commander does not report that the fire is out or under control within 20 minutes of the receipt of the <u>fire alarm</u>, then the control room shall notify the Incident Commander of the amount of time that has expired and the off-site fire department will be called.</p> <p>In ON-114 it states that if the fire brigade cannot extinguish the fire and offsite assistance is required, then commence a controlled plant shutdown using GP-3-2 "Normal Plant Shutdown" on the affected unit.</p>
Distractors:	A	<p>Time is correct</p> <p>Direction is plausible because as a fire progresses it may damage ECCS systems or affect safe shutdown, at which time performing GP-4 would be a correct action. At this time there is nothing to indicate these systems are being affected.</p>
	B	<p>Time is plausible if candidate misapplies the 20 minute time limit to when the fire was visually confirmed and not when fire alarm came in.</p> <p>Direction is plausible because as a fire progresses it may damage ECCS systems or affect safe shutdown, at which time performing GP-4 would be a correct action. At this time there is nothing to indicate these systems are being affected.</p>
	D	<p>Time is plausible if candidate misapplies the 20 minute time limit to when the fire was visually confirmed and not when fire alarm came in.</p> <p>The direction to perform GP-3-2 is correct</p>

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

Question 74 Info																																	
Question Type:	Multiple Choice																																
Status:	Active																																
Always select on test?	No																																
Authorized for practice?	No																																
Points:	1.00																																
Time to Complete:	0																																
Difficulty:	1.00																																
System ID:	2079067																																
User-Defined ID:	B NRC 2019																																
Cross Reference Number:	2.4.25																																
Topic:	ILT 2100-1-009																																
Num Field 1:																																	
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EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

75

ID: 992820

Points: 1.00

Unit 2 conditions are as follows

- Operating near End-Of-Cycle with core flow at 100%
- RO is performing 'Daily Surveillance Log'

Which one of the following describes how Narrow Range RPV level indication compares to Wide Range RPV level indication?

- A. Wide Range indicates lower than Narrow Range, due to high flow near the Wide Range variable leg tap.
- B. Wide Range indicates higher than Narrow Range, due to high flow near the Wide Range variable leg tap.
- C. Narrow Range indicates lower than Wide Range, due to high flow near the Narrow Range variable leg tap.
- D. Narrow Range indicates higher than Wide Range, due to high flow near the Narrow Range variable leg tap.

Answer: A

Answer Explanation		
Choice		Basis or Justification
Correct:	A	High flow near WR variable leg tap reduces pressure due to venturi effect causing lower indication.
Distractors:	B	Plausible if the candidate does not recall the effect of high flow has on the WR variable leg tap
	C	Plausible if the candidate does not recall the effect of high flow is on the WR variable leg tap
	D	Plausible if the candidate does not recall the effect of high flow is on the WR variable leg tap

EXAMINATION ANSWER KEY

2019 NRC RO Exam rev1

Question 75 Info																			
Question Type:	Multiple Choice																		
Status:	Active																		
Always select on test?	No																		
Authorized for practice?	No																		
Points:	1.00																		
Time to Complete:	1																		
Difficulty:	1.00																		
System ID:	992820																		
User-Defined ID:	B NRC 2019																		
Cross Reference Number:	216000 K5.09 OR 2.1.45																		
Topic:	ILT-5002B-5g-001 Recirc flow effect on WR																		
Num Field 1:																			
Num Field 2:	N/A																		
Text Field:																			
Comments:	:																		
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REQUIRED MATERIALS:	None																		
Notes and Comments:	None																		

EXAMINATION ANSWER KEY

2019 NRC SRO Exam Rev1

1

Points: 1.00

While operating at full power, the following conditions exist:

- Instrument air header pressures are 75 psig and lowering.
- No compressors are responding to the low pressure condition.
- The URO reports control rod 22-23 is drifting in from position 48.

Based on the above conditions, which one of the following actions is required to be directed?

Direct the URO to:

- A. perform a GP-4, "Manual Reactor Scram" per ON-119, "Loss of Instrument Air".
- B. place the Reactor Mode Switch to Shutdown per ON-119 "Loss of Instrument Air".
- C. select and insert rod 22-23 to Full-In '00' using Emergency-In per ON-121 "Drifting Control Rod".
- D. select rod 22-23 and monitor for additional drifting rods per ON-108 "Low CRD Scram Air Header Pressure".

Answer: B

Answer Explanation		
Choice		Basis or Justification
Correct:	B	Correct, the candidate must determine that the low air headed pressure is a symptom for entry into ON-119. The drifting control rod is also a symptom for entry into ON-121. The candidate must determine that ON-119 actions have priority over ON-121. Per ON-119. Any one rod drift requires an immediate scram with the low air header pressure condition.
Distractors :	A	The ON-119 action is to perform a Reactor scram. Plausible because the intended action is to shutdown the Reactor. Scramming the Reactor vs performing a GP-4 shutdown prevents an unwanted random rod pattern. Performing a GP-4 shutdown when Instrument Air header pressure is less than 75 psig is a correct action but that action is superseded by the requirement to scram when a rod begins to drift.
	C	Plausible because inserting the control rod is a correct action for ON-121, "Drifting Control Rod", however the actions in ON-119 require a scram because the rod is drifting due to the loss of air pressure.
	D	Plausible because monitoring for additional drifting rods is a required action of ON-108. ON-108, "Low CRD Scram Air Header Pressure" require a scram on the second drifting control rod, however the actions in ON-119 require a scram because the rod is drifting due to the loss of air pressure.

EXAMINATION ANSWER KEY

2019 NRC SRO Exam Rev1

Question 1 Info																															
Question Type:	Multiple Choice																														
Status:	Active																														
Always select on test?	No																														
Authorized for practice?	No																														
Points:	1.00																														
Time to Complete:	0																														
Difficulty:	1.00																														
System ID:	2095809																														
User-Defined ID:	B NRC 2019																														
Cross Reference Number:	295019 A2.01																														
Topic:	ILT-1550-22c-005-SRO																														
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REQUIRED MATERIALS:	None																														
Notes and Comments:	This question was used on the 2002 NRC exam																														

EXAMINATION ANSWER KEY

2019 NRC SRO Exam Rev1

2

Points: 1.00

A trip of the "A" Recirculation pump has occurred on Unit 2.

- The Crew has completed all the immediate actions of OT-112, "Unexpected/Unexplained Change in Core Flow".
- The plant is operating in Region 2 of the Power to Flow map.
- "A" Recirc pump speed - 0 rpm
- "B" Recirc pump speed - 1580 rpm

Flow through the inactive jet pumps is ____ (1) ____, the CRS shall direct ____ (2) ____ to exit Region 2.

- A. (1) forward
(2) inserting NF-AB-720-F-1, "Control Rod Sequence Review and Approval Sheet" approved control rods
- B. (1) reverse
(2) inserting NF-AB-720-F-1, "Control Rod Sequence Review and Approval Sheet" approved control rods
- C. (1) forward
(2) raising the speed of the "B" Recirc pump per step 3.2.3 of OT-112 "Unexpected/Unexplained Change in Core Flow"
- D. (1) reverse
(2) raising the speed of the "B" Recirc pump per step 3.2.3 of OT-112 "Unexpected/Unexplained Change in Core Flow"

Answer: B

Answer Explanation

EXAMINATION ANSWER KEY

2019 NRC SRO Exam Rev1

Choice		Basis or Justification
Correct:	B	Flow is reverse through the inactive loop because speed on the operating Recirc pump is greater than 650 RPM. There are two options to exit region 2, inserting control rods or raising recirc flow. The "B" Recirc pump speed must be lowered per the guidance in OT-112, because of that raising Recirc flow is not an option to exit Region 2. the correct option is to insert control rods.
Distractors :	A	Part 1 is incorrect: The flow through the inactive loop is not forward because Recirc pump speed is greater than 650 rpm. Plausible if the candidate does not recall the point at which flow transition from forward to reverse. Part 2 is correct
	C	Part 1 is incorrect: The flow through the inactive loop is not forward because Recirc pump speed is greater than 650 rpm. Plausible if the candidate does not recall the point at which flow transition from forward to reverse. Part 2 is incorrect: Region 2 can be exited by either inserting control rods or raising flow on the operating Recirc pump. choosing raising speed is incorrect because OT-112 also directs that the speed of the operating recirc loop be reduced to below 1485 rpm. With speed at 1580 rpm raising speed to exit Region 2 is not an option. Plausible if the candidate does not recall the speed limit on the operating pump.
	D	Part 1 is correct. Part 2 is incorrect: Region 2 can be exited by either inserting control rods or raising flow on the operating Recirc pump. choosing raising speed is incorrect because OT-112 also directs that the speed of the operating recirc loop be reduced to below 1485 rpm. With speed at 1580 rpm raising speed to exit Region 2 is not an option. Plausible if the candidate does not recall the speed limit on the operating pump.

EXAMINATION ANSWER KEY

2019 NRC SRO Exam Rev1

Question 2 Info																																															
Question Type:	Multiple Choice																																														
Status:	Active																																														
Always select on test?	No																																														
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Points:	1.00																																														
Time to Complete:	0																																														
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System ID:	2096112																																														
User-Defined ID:	B NRC 2019																																														
Cross Reference Number:	295001 A2.04																																														
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Reference(s):	OT-112																																														
Learning Objective:	PLOT - 1540-2																																														
K/A System:	295001 - Partial or Complete Loss of Forced Circulation	Importance; / SRO	RO 3.8																																												
K/A Statement:	A2.04 - Ability to determine and/or interpret the following as they apply to Partial or Complete Loss of Forced Core Flow Circulation: Individual jet pump flows																																														
REQUIRED MATERIALS:	none																																														
Notes and Comments:	none																																														

EXAMINATION ANSWER KEY

2019 NRC SRO Exam Rev1

3

Points: 1.00

The following conditions exist on Unit 2 following a small LOCA:

- All control rods are fully inserted.
- RPV Level is -120 inches and lowering at 2 inches per minute.
- RPV Pressure is 960 psig and steady.
- Drywell Pressure is 4 psig.
- Torus Pressure is 3 psig.
- MSIVs are closed.
- HPCI and RCIC are both unavailable for injection.

Which of the following actions are required?

- A. Lineup and start HPSW pumps to inject per T-245, "HPSW Injection into the RPV".
- B. Rapidly depressurize the RPV with BPVs per step T-101 RC/P-12.
- C. Lower RPV pressure to inject with Core Spray without exceeding the Technical Specification Cooldown limits per T-101, "RPV Control".
- D. Lower RPV pressure to inject with Condensate without exceeding the Technical Specification Cooldown limits per T-101, "RPV Control".

Answer: D

Answer Explanation		
Choice	Basis or Justification	
Correct:	D	T-101 steps RC/P-17 directs beginning an RPV depressurization maintaining cool down rate below 100° F/hr. RC/P-16 along with RC/L-4 allows for using Condensate system to restore RPV level.
Distractors:	A	Per T-245, "HPSW Injection into the RPV" placing the HPSW pumps in service and the majority of valve manipulations are not completed until RPV pressure is below 400 psig. plausible if the candidate does not recall that HPSW does not have min flow protection and cannot be placed in-service until RPV pressure is below pump shutoff head.
	B	For the conditions given, the plant is not approaching a limit that requires an Emergency Blowdown (T-112) in T-102, T-103, T-104. RC/P-12, rapidly depressurize with BPVs, is not used. In addition, the MSIVs are closed which eliminates use of BPVs. Plausible if the candidate does not understand initial plant conditions and does not understand the EOP guideline about maintaining inventory.
	C	The Core Spray system will not inject into the RPV until RPV pressure is lower than 330 psig. Lowering pressure to below 330 psig will be a violation of the Tech Spec 100oF/hr cooldown rate. Plausible if the candidate does not understand that other systems are available that will not violate cooldown rate.

EXAMINATION ANSWER KEY

2019 NRC SRO Exam Rev1

Question 3 Info																																																			
Question Type:	Multiple Choice																																																		
Status:	Active																																																		
Always select on test?	No																																																		
Authorized for practice?	No																																																		
Points:	1.00																																																		
Time to Complete:	0																																																		
Difficulty:	1.00																																																		
System ID:	994435																																																		
User-Defined ID:	B NRC 2019																																																		
Cross Reference Number:	295031 EA2.03																																																		
Topic:	ILT-2101-6-005 SRO																																																		
Num Field 1:	0.00																																																		
Num Field 2:	0.00																																																		
Text Field:																																																			
Comments:	<table border="1"> <thead> <tr> <th colspan="4">Psychometrics</th> </tr> <tr> <th>Level of Knowledge</th> <th>Difficulty</th> <th>Time Allowance (minutes)</th> <th>SRO</th> </tr> </thead> <tbody> <tr> <td>HIGH</td> <td></td> <td></td> <td>10CRF55.43(b) 5</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th colspan="4">Source Documentation</th> </tr> </thead> <tbody> <tr> <td>Source:</td> <td colspan="3"> <div> <div>New Exam item</div> <div>Modified Bank</div> <div>Bank</div> <div><input checked="" type="checkbox"/> ILT Exam Bank</div> </div> <div>Previous NRC Exam</div> <div>Other Exam</div> </td> </tr> <tr> <td>Reference(s):</td> <td colspan="3">T-101 and Bases, T-112 and Bases, T-102 and Bases.</td> </tr> <tr> <td>Learning Objective:</td> <td colspan="3">PLOT-2101-1</td> </tr> <tr> <td>K/A System:</td> <td>295031 Reactor Low Water Level</td> <td>Importance;</td> <td>RO / SRO</td> </tr> <tr> <td></td> <td></td> <td>4.2</td> <td></td> </tr> <tr> <td>K/A Statement:</td> <td colspan="3">Ability to determine and/or interpret the following as they apply to Reactor Low Water Level : Reactor pressure</td> </tr> <tr> <td>REQUIRED MATERIALS:</td> <td colspan="3">None</td> </tr> <tr> <td>Notes and Comments:</td> <td colspan="3">None</td> </tr> </tbody> </table>			Psychometrics				Level of Knowledge	Difficulty	Time Allowance (minutes)	SRO	HIGH			10CRF55.43(b) 5	Source Documentation				Source:	<div> <div>New Exam item</div> <div>Modified Bank</div> <div>Bank</div> <div><input checked="" type="checkbox"/> ILT Exam Bank</div> </div> <div>Previous NRC Exam</div> <div>Other Exam</div>			Reference(s):	T-101 and Bases, T-112 and Bases, T-102 and Bases.			Learning Objective:	PLOT-2101-1			K/A System:	295031 Reactor Low Water Level	Importance;	RO / SRO			4.2		K/A Statement:	Ability to determine and/or interpret the following as they apply to Reactor Low Water Level : Reactor pressure			REQUIRED MATERIALS:	None			Notes and Comments:	None		
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REQUIRED MATERIALS:	None																																																		
Notes and Comments:	None																																																		

EXAMINATION ANSWER KEY

2019 NRC SRO Exam Rev1

4

Points: 1.00

Unit 2 is in a refueling outage when a fuel assembly is dropped and damaged. All of the Refueling Floor Area Radiation Monitors (ARMs) alarm and a PCIS Group III isolation occur. Ten minutes later, the following radiation readings are observed:

- All Refueling Floor ARMs: Above alarm setpoints
- Main Stack radiation on RI-0-17-50A(B): $1.8 \text{ E}^0 \text{ mCi/CC}$
- Vent Stack radiation on RI-2979 A(B): $2.0 \text{ E}^{-7} \text{ mCi/CC}$
- Refueling Floor radiation on RIS-2-17-458 A-D: 3 mrem/hr
- Refueling Floor radiation on RR-2-17-456 red pen: 3 mrem/hr
- Refueling Floor radiation on RR-2-17-456 black pen: 3 mrem/hr

Which one of the following statements regarding the accuracy of the Refuel Floor Ventilation system radiation monitor readings AND the required actions.

- A. (1) Refuel Floor Ventilation system radiation monitor readings are accurate
(2) Restore Reactor and Refuel Ventilation using T-222, "Secondary Containment Ventilation Bypass"
- B. (1) Refuel Floor Ventilation system radiation monitor readings are accurate
(2) Per T-103, "Secondary Containment Control", DO NOT restore Reactor and Refuel Ventilation
- C. (1) Refuel Floor Ventilation system radiation monitor readings are NOT accurate
(2) Restore Reactor and Refuel Ventilation using T-222, "Secondary Containment Ventilation Bypass"
- D. (1) Refuel Floor Ventilation system radiation monitor readings are NOT accurate
(2) Per T-103, "Secondary Containment Control", DO NOT restore Reactor and Refuel Ventilation

Answer: D

Answer Explanation

EXAMINATION ANSWER KEY

2019 NRC SRO Exam Rev1

Choice		Basis or Justification
Correct:	D	<p>The Refueling Floor system radiation readings are not "accurate" per the GP-8B Section 5 Note. This is because there is no flow past the radiation monitors since the PCIS Group III isolation has tripped the Refuel Floor ventilation fans.</p> <p>The SRO candidate must use the facts to determine if restoring ventilation is appropriate. Even though the Refuel radiation monitors are now below the isolation setpoints. The Refuel Floor ventilation system should not be restarted since high radiation conditions continue to exist on the Refuel Floor. This is indicated by the alarming ARMs and the high Main Stack Radiation reading.</p>
Distractors :	A	Plausible if the candidate does not understand that the indication is not valid because of no flow. Plausible if the candidate believes that ventilation can be restored because levels are below the isolation setpoint.
	B	Plausible if the candidate does not understand that the indication is not valid because of no flow.
	C	Plausible if the candidate believes that ventilation can be restored because levels are below the isolation setpoint.

EXAMINATION ANSWER KEY

2019 NRC SRO Exam Rev1

Question 4 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	0
Difficulty:	1.00
System ID:	2078554
User-Defined ID:	B NRC 2019
Cross Reference Number:	295038 2.1.31
Topic:	ILT 2103-8-002 SRO
Num Field 1:	
Num Field 2:	
Text Field:	

EXAMINATION ANSWER KEY

2019 NRC SRO Exam Rev1

Comments:	Psychometrics			
	Level of Knowledge	Difficulty	Time Allowance (minutes)	SRO
	HIGH			10CRF55.43(b) 5
	Source Documentation			
	Source:	<input checked="" type="checkbox"/> New Exam item <input type="checkbox"/> Previous NRC Exam <input type="checkbox"/> Modified Bank Other <input type="checkbox"/> Exam Bank <input type="checkbox"/> ILT Exam Bank		
	Reference(s):	GP-8B, M-334, ARC 218 A-1, ARC 003 D-1, ON-124, ARC 216 L-1, T-222		
	Learning Objective:	PLOT 2103 8		
	K/A System:	295038 High Off-site Release Rates	Importance; RO / SRO	4.3
	K/A Statement:	2.1.31 - Ability to locate control room switches, controls and indications and to determine that they correctly reflect the desired plant lineup.		
	REQUIRED MATERIALS:	None		
Notes and Comments:	Justification: The SRO candidate must use the facts to determine if restoring ventilation is appropriate. Even though the Refuel radiation monitors are now below the isolation setpoints. The Refuel Floor ventilation system should not be restarted since high radiation conditions continue to exist on the Refuel Floor. This is indicated by the alarming ARMs and the high Main Stack Radiation reading.			

EXAMINATION ANSWER KEY

2019 NRC SRO Exam Rev1

5

Points: 1.00

Unit 2 is at 85% power during end of cycle coast down.

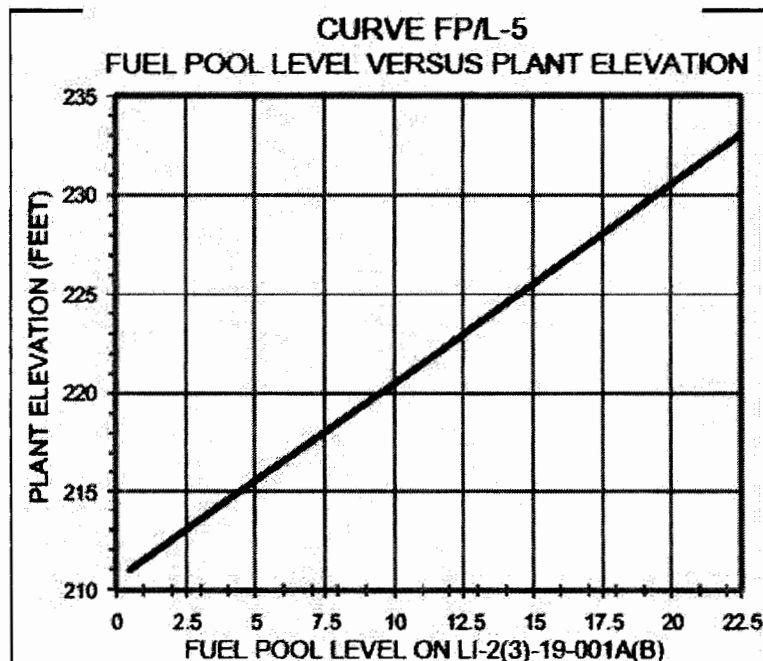
- New fuel is being moved in the fuel pool in preparations for the upcoming outage
- The Reactor Services Supervisor reports that Fuel pool level has unexpectedly lowered to 232 ft 2 in

The CRS must ____ (1) ____.

10 minutes later

- Fuel pool level is 0.5 ft on LI-2-19-001A.

The CRS must ____ (2) ____.



- A. (1) enter ON-124 "Fuel Floor and Fuel Handling Problems" ONLY
(2) makeup to the fuel pool (only)
- B. (1) enter ON-124 "Fuel Floor and Fuel Handling Problems" ONLY
(2) makeup to the fuel pool and spray the fuel pool
- C. (1) enter ON-124 "Fuel Floor and Fuel Handling Problems" AND T-103 "Secondary Containment Control"
(2) makeup to the fuel pool (only)
- D. (1) enter ON-124 "Fuel Floor and Fuel Handling Problems" AND T-103 "Secondary Containment Control"
(2) makeup to the fuel pool and spray the fuel pool

Answer: D

Answer Explanation

EXAMINATION ANSWER KEY

2019 NRC SRO Exam Rev1

Choice		Basis or Justification
Correct:	D	ON-124 is entered as the Fuel pool level has dropped unexpectedly. T-103 would be entered when the Fuel Pool Cooling Trouble alarm comes in on a low Fuel Pool level of 232 Ft 4 inches. Fuel Pool level at .5 ft as indicated on LI-2-19-001A is below the top of the fuel racks and requires the fuel pool to be sprayed.
Distractors:	A	Plausible if the candidate believes that conditions require entry into ON-124 only for the unexpected drop in fuel pool level, however T-103 would also be entered when the Fuel Pool Cooling Trouble alarm comes in on a low Fuel Pool level of 232 Ft 4 inches. Plausible if the candidate does not understand that the Fuel pool is below the top of the fuel racks and requires to be sprayed.
	B	Plausible if the candidate believes that conditions require entry into ON-124 only for the unexpected drop in fuel pool level, however T-103 would also be entered when the Fuel Pool Cooling Trouble alarm comes in on a low Fuel Pool level of 232 Ft 4 inches.
	C	Plausible if the candidate does not understand that the Fuel pool is below the top of the fuel racks and requires to be sprayed.

EXAMINATION ANSWER KEY

2019 NRC SRO Exam Rev1

Question 5 Info																																			
Question Type:	Multiple Choice																																		
Status:	Active																																		
Always select on test?	No																																		
Authorized for practice?	No																																		
Points:	1.00																																		
Time to Complete:	0																																		
Difficulty:	1.00																																		
System ID:	2084602																																		
User-Defined ID:	B NRC 2019																																		
Cross Reference Number:	295023 2.4.8																																		
Topic:	ILT- 2103 3 - 001 SRO Describe how event-based Emergency/Abnormal operating procedures are u																																		
Num Field 1:																																			
Num Field 2:																																			
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Comments:	<table border="1"> <thead> <tr> <th colspan="4">Psychometrics</th> </tr> <tr> <th>Level of Knowledge</th> <th>Difficulty</th> <th>Time Allowance (minutes)</th> <th>SRO</th> </tr> </thead> <tbody> <tr> <td>High</td> <td></td> <td></td> <td>10CRF55.43(b) 5</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th colspan="2">Source Documentation</th> </tr> </thead> <tbody> <tr> <td>Source:</td> <td> <input checked="" type="checkbox"/> New Exam item <input type="checkbox"/> Previous NRC Exam <input type="checkbox"/> Modified Bank <input type="checkbox"/> Exam Bank <input type="checkbox"/> Other <input type="checkbox"/> ILT Exam Bank </td> </tr> <tr> <td>Reference(s):</td> <td>ON-124, T-103 and bases</td> </tr> <tr> <td>Learning Objective:</td> <td>PLOT- 2103 3</td> </tr> <tr> <td>K/A System:</td> <td> <table border="1"> <tr> <td>295023 - Refueling Accident</td> <td>Importance; RO / SRO</td> </tr> <tr> <td></td> <td>4.5</td> </tr> </table> </td> </tr> <tr> <td>K/A Statement:</td> <td>2.4.8 - Knowledge of how abnormal operating procedures are used in conjunction with EOPs</td> </tr> <tr> <td>REQUIRED MATERIALS:</td> <td>None</td> </tr> <tr> <td>Notes and Comments:</td> <td>Graph is embedded as it is necessary to answer the question. The graph is used to make decisions on the EOP, to better match the K/A.</td> </tr> </tbody> </table>			Psychometrics				Level of Knowledge	Difficulty	Time Allowance (minutes)	SRO	High			10CRF55.43(b) 5	Source Documentation		Source:	<input checked="" type="checkbox"/> New Exam item <input type="checkbox"/> Previous NRC Exam <input type="checkbox"/> Modified Bank <input type="checkbox"/> Exam Bank <input type="checkbox"/> Other <input type="checkbox"/> ILT Exam Bank	Reference(s):	ON-124, T-103 and bases	Learning Objective:	PLOT- 2103 3	K/A System:	<table border="1"> <tr> <td>295023 - Refueling Accident</td> <td>Importance; RO / SRO</td> </tr> <tr> <td></td> <td>4.5</td> </tr> </table>	295023 - Refueling Accident	Importance; RO / SRO		4.5	K/A Statement:	2.4.8 - Knowledge of how abnormal operating procedures are used in conjunction with EOPs	REQUIRED MATERIALS:	None	Notes and Comments:	Graph is embedded as it is necessary to answer the question. The graph is used to make decisions on the EOP, to better match the K/A.
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EXAMINATION ANSWER KEY

2019 NRC SRO Exam Rev1

6

Points: 1.00

A Unit 3 startup is in progress with the following plant conditions:

- Reactor power is 22%
- Generator output is 200 MWe
- Annunciator TURBINE STOP V. CLOSURE & CONTROL VLV FAST CLOSURE SCRAM BYPASS (310 A-2) is lit
- A failure causes the Power-to-Load Unbalance circuit to actuate
- The POWER LOAD UNBALANCE TRIP (306 B-1) annunciator alarms
- TCS_FASACTIVE is alarming on the DEHC HMI
- TCS_PLUSET is alarming on the DEHC HMI
- All other plant response is normal

Which one of the following describes (1) the automatic plant response and (2) the correct procedural direction for this event?

- A. (1) Main Generator Lockout, Main Turbine Trip, and Reactor scram
(2) Implement T-101 "RPV Control"
- B. (1) Main Generator Lockout, Main Turbine Trip, and Reactor scram
(2) Implement T-100 "Scram"
- C. (1) Main Generator Lockout and Main Turbine Trip ONLY
(2) Halt GP-2 "Startup" until the Power to Load Unbalance circuit can be repaired.
- D. (1) Main Generator Lockout and Main Turbine Trip ONLY
(2) Direct GP-3 "Shutdown"

Answer: C

Answer Explanation

EXAMINATION ANSWER KEY

2019 NRC SRO Exam Rev1

Correct:	C	<p>If the PLU circuit (part of DEHC logic) energizes, a generator lockout and turbine trip will occur. Since reactor power is < 26.3% RTP (turbine 1st stage pressure is < 111 psig), a reactor scram will not occur as a result of the TSV/TCV closure. The turbine bypass valves will rapidly open, preventing a scram from high reactor pressure/neutron flux. The end result will be the reactor operating at 22% power with the turbine-generator off-line.</p> <p>The SRO candidate must evaluate the situation and understand (Per the guidance in GP-2 "Normal Plant Startup" and Tech Specs) that the startup cannot continue above 55% power or until thermal limits are updated for the PLU unbalance circuit being out of service.</p>
Distractors:	A	<p>The PLU circuit will only produce a generator lockout and turbine trip; a Reactor scram will not occur based on power level; T-101 would be plausible if the individual believes a Reactor scram had occurred. The ARC lists both T-100 and T-101 as appropriate. Plausible if applicant does not understand PLU circuit function/design.</p>
	B	<p>The PLU circuit will only produce a generator lockout and turbine trip; a Reactor scram will not occur based on power level; T-100 would be plausible if the individual believes a Reactor scram had occurred. The ARC lists both T-100 and T-101 as appropriate. Plausible if applicant does not understand PLU circuit function/design.</p>
	D	<p>PLU circuit actuation causes a rapid closure of turbine control and intercept valves, which is functionally like a turbine trip. Turbine control valve closure results in a reactor scram if power is above 26.3%, as measured by turbine 1st stage pressure. In this case, the scram is bypassed as indicated by annunciator 310 A-2. GP-3 is plausible if individual believes the condition warrants shutting down the plant as a result of the equipment malfunction. While the decision may be made to conduct a shutdown, there is no direction to do so based on the conditions provided.</p>

EXAMINATION ANSWER KEY

2019 NRC SRO Exam Rev1

Question 6 Info																																															
Question Type:	Multiple Choice																																														
Status:	Active																																														
Always select on test?	No																																														
Authorized for practice?	No																																														
Points:	1.00																																														
Time to Complete:	0																																														
Difficulty:	1.00																																														
System ID:	2078594																																														
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EXAMINATION ANSWER KEY

2019 NRC SRO Exam Rev1

7

Points: 1.00

An ATWS is in progress on Unit 2 with the following conditions reported:

- Reactor Power 5%
- RPV Level -215 inches and steady
- RPV Pressure 750 psig
- Torus Temperature 90°F
- Torus Level 14 feet

T-240, "Termination and Prevention of Injection into the RPV" procedure has been completed to allow an emergency blowdown to be performed.

- Only 3 SRVs could be opened during the performance of T-112, "Emergency Blowdown".
- RPV Pressure is now 300 psig and dropping.

(1) Which one of the following statements is correct regarding Adequate Core Cooling (ACC)?

and

(2) What is the required action?

- A. (1) ACC is being maintained by Steam Cooling
(2) slowly raise RPV injection rate to restore and maintain level above -195 inches
- B. (1) ACC is being maintained by Steam Cooling
(2) slowly raise RPV injection to restore and maintain RPV pressure above 460 psig
- C. (1) ACC is NOT being maintained
(2) slowly raise RPV injection rate to restore and maintain level above -195 inches
- D. (1) ACC is NOT being maintained
(2) slowly raise RPV injection to restore and maintain RPV pressure above 460 psig

Answer: C

Answer Explanation

EXAMINATION ANSWER KEY

2019 NRC SRO Exam Rev1

Choice		Basis or Justification
Correct:	C	With only 3 SRVs open Steam cooling ACC is lost at 460 psig. Per T-117 once pressure falls below 460 psig per table LQ-1 re-injection is directed to restore level above -195"
Distractors:	A	<p>Part 1 is not correct: ACC is lost when RPV pressure drops below 460 psig with only three SRVs open. Plausible if the candidate uses the Steam Cooling value for 5 SRVs open which is 270 psig.</p> <p>Part 2 is correct: Raising RPV level above -195 inches the correct action once the blowdown lowers RPV pressure below the pressure where ACC is lost (460 psig). That makes raising level above -195 inches plausible even if ACC is maintained.</p>
	B	<p>Part 1 is incorrect: ACC is lost when RPV pressure drops below 460 psig with only three SRVs open. Plausible if the candidate uses the Steam Cooling value for 5 SRVs open which is 270 psig.</p> <p>Part 2 is incorrect: Post Emergency Blowdown, T-116 directs this action with RPV level unknown not per T-117. Plausible if the candidates confuses the T-116 and T-117 directions. Additionally raising injection so that RPV pressure is above 460 psig would restore ACC but it is not within the strategy for an ATWS with level known.</p>
	D	<p>Part 1 is correct.</p> <p>Part 2 is incorrect: Post Emergency Blowdown, T-116 directs this action with RPV level unknown not per T-117. Plausible if the candidates confuses the T-116 and T-117 directions. Additionally raising injection so that RPV pressure is above 460 psig would restore ACC but it is not within the strategy for an ATWS with level known.</p>

EXAMINATION ANSWER KEY

2019 NRC SRO Exam Rev1

Question 7 Info																																															
Question Type:	Multiple Choice																																														
Status:	Active																																														
Always select on test?	No																																														
Authorized for practice?	No																																														
Points:	1.00																																														
Time to Complete:	0																																														
Difficulty:	1.00																																														
System ID:	993793																																														
User-Defined ID:	B NRC 2019																																														
Cross Reference Number:	295037 A2 06																																														
Topic:	ILT-PBIG2117-5a-005 SRO When to reinject after B/D																																														
Num Field 1:																																															
Num Field 2:																																															
Text Field:																																															
Comments:	<table border="1"> <thead> <tr> <th colspan="4">Psychometrics</th> </tr> <tr> <th>Level of Knowledge</th> <th>Difficulty</th> <th>Time Allowance (minutes)</th> <th>SRO</th> </tr> </thead> <tbody> <tr> <td>HIGH</td> <td></td> <td></td> <td>10CRF55.43(b) 5</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th colspan="4">Source Documentation</th> </tr> </thead> <tbody> <tr> <td>Source:</td> <td colspan="3"> <div> <div>New Exam item</div> <div>Previous NRC Exam</div> <div>Modified Bank</div> <div>Exam Bank</div> <div><input checked="" type="checkbox"/> ILT Exam Bank</div> </div> <div>Other</div> </td> </tr> <tr> <td>Reference(s):</td> <td colspan="3">T-117 and bases, T-112 and Bases</td> </tr> <tr> <td>Learning Objective:</td> <td colspan="3">PLOT-2117-5</td> </tr> <tr> <td>K/A System:</td> <td>295037 - SCRAM Condition Present and Reactor Power Above Downscale or Unknown</td> <td>Importance; SRO 4.1</td> <td>RO /</td> </tr> <tr> <td>K/A Statement:</td> <td colspan="3">A2 06 - Ability to determine and/or interpret the following as they apply to SCRAM Condition Present and Reactor Power Above APRM Downscale or Unknown: Reactor Pressure</td> </tr> <tr> <td>REQUIRED MATERIALS:</td> <td colspan="3">None</td> </tr> <tr> <td>Notes and Comments:</td> <td colspan="3">None</td> </tr> </tbody> </table>			Psychometrics				Level of Knowledge	Difficulty	Time Allowance (minutes)	SRO	HIGH			10CRF55.43(b) 5	Source Documentation				Source:	<div> <div>New Exam item</div> <div>Previous NRC Exam</div> <div>Modified Bank</div> <div>Exam Bank</div> <div><input checked="" type="checkbox"/> ILT Exam Bank</div> </div> <div>Other</div>			Reference(s):	T-117 and bases, T-112 and Bases			Learning Objective:	PLOT-2117-5			K/A System:	295037 - SCRAM Condition Present and Reactor Power Above Downscale or Unknown	Importance; SRO 4.1	RO /	K/A Statement:	A2 06 - Ability to determine and/or interpret the following as they apply to SCRAM Condition Present and Reactor Power Above APRM Downscale or Unknown: Reactor Pressure			REQUIRED MATERIALS:	None			Notes and Comments:	None		
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REQUIRED MATERIALS:	None																																														
Notes and Comments:	None																																														

EXAMINATION ANSWER KEY

2019 NRC SRO Exam Rev1

8

Points: 1.00

A transient on Unit 2 resulted in the following plant conditions:

- An ATWS is in progress
- Reactor level is -185 inches and steady
- Drywell temperature rose to 345°F and is now 330°F due to placing drywell sprays in service
- Torus level is 17.2 feet and up slow
- HPCI and RCIC room temperatures are 150°F and up slow

Which one of the above parameters/conditions requires entry into and execution of T-112 "Emergency Blowdown"?

- A. Torus level
- B. Reactor level
- C. Drywell temperature
- D. HPCI and RCIC room temperatures

Answer: A

Answer Explanation		
Answer Key		
Choice		Basis or Justification
Correct:	A	T-112 does not have entry conditions. The candidate must evaluate all of the conditions based on the individual EOP steps and determine which condition requires an Emergency Blowdown. Torus level above 17.1 feet violates the PSP curve, which requires an emergency blowdown per T-112.
Distractors:	B	This is an expected RPV level condition during an ATWS. Plausible if the candidate uses the -172 inches for non-ATWS conditions.
	C	T-102 directs an emergency blowdown if drywell temperature cannot be <u>restored and maintained</u> below 340 degrees. Momentarily exceeding 340 degrees does not, by itself, require an emergency blowdown. Plausible if the candidate does not apply the restore part of the step and believes that exceeding the value is reason for the blowdown.
	D	T-103 directs an emergency blowdown when the same parameter exceeds an action level in more than one area <u>and the primary system breach has not been isolated</u> . The HPCI and RCIC rooms are the same area (and no information was given regarding a primary system breach).

EXAMINATION ANSWER KEY

2019 NRC SRO Exam Rev1

Question 8 Info																																															
Question Type:	Multiple Choice																																														
Status:	Active																																														
Always select on test?	No																																														
Authorized for practice?	No																																														
Points:	1.00																																														
Time to Complete:	0																																														
Difficulty:	1.00																																														
System ID:	2096115																																														
User-Defined ID:	B NRC 2019																																														
Cross Reference Number:	295029 A2.03																																														
Topic:	ILT - 2102-5-006-SRO																																														
Num Field 1:																																															
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Text Field:																																															
Comments:	<table border="1"> <thead> <tr> <th colspan="4">Psychometrics</th> </tr> <tr> <th>Level of Knowledge</th> <th>Difficulty</th> <th>Time Allowance (minutes)</th> <th>RO</th> </tr> </thead> <tbody> <tr> <td>Memory</td> <td></td> <td></td> <td>10CRF55.43(b)5</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th colspan="4">Source Documentation</th> </tr> </thead> <tbody> <tr> <td>Source:</td> <td colspan="2"> <input type="checkbox"/> New Exam item <input type="checkbox"/> Modified Bank <input type="checkbox"/> Exam Bank <input checked="" type="checkbox"/> ILT Exam Bank </td> <td> <input type="checkbox"/> Previous NRC <input type="checkbox"/> Other </td> </tr> <tr> <td>Reference(s):</td> <td colspan="3">T-102 and bases</td> </tr> <tr> <td>Learning Objective:</td> <td colspan="3">PLOT - 2102-5</td> </tr> <tr> <td>K/A System:</td> <td>295029 - High Suppression Pool Water Level</td> <td>Importance; / SRO</td> <td>RO 3.5</td> </tr> <tr> <td>K/A Statement:</td> <td colspan="3">A2.03 - Ability to determine and/or interpret the following as they apply to High Suppression Pool Water Level: Drywell/Containment water level</td> </tr> <tr> <td>REQUIRED MATERIALS:</td> <td colspan="3">None</td> </tr> <tr> <td>Notes and Comments:</td> <td colspan="3">This is SRO knowledge as there are no direct entries into T-112 "Emergency Blowdown". Decisions must be made in T-101 "RPV Control", T-102 "Primary Containment Control", or T-103 "Secondary Containment Control" in order to enter T-112.</td> </tr> </tbody> </table>			Psychometrics				Level of Knowledge	Difficulty	Time Allowance (minutes)	RO	Memory			10CRF55.43(b)5	Source Documentation				Source:	<input type="checkbox"/> New Exam item <input type="checkbox"/> Modified Bank <input type="checkbox"/> Exam Bank <input checked="" type="checkbox"/> ILT Exam Bank		<input type="checkbox"/> Previous NRC <input type="checkbox"/> Other	Reference(s):	T-102 and bases			Learning Objective:	PLOT - 2102-5			K/A System:	295029 - High Suppression Pool Water Level	Importance; / SRO	RO 3.5	K/A Statement:	A2.03 - Ability to determine and/or interpret the following as they apply to High Suppression Pool Water Level: Drywell/Containment water level			REQUIRED MATERIALS:	None			Notes and Comments:	This is SRO knowledge as there are no direct entries into T-112 "Emergency Blowdown". Decisions must be made in T-101 "RPV Control", T-102 "Primary Containment Control", or T-103 "Secondary Containment Control" in order to enter T-112.		
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EXAMINATION ANSWER KEY

2019 NRC SRO Exam Rev1

9

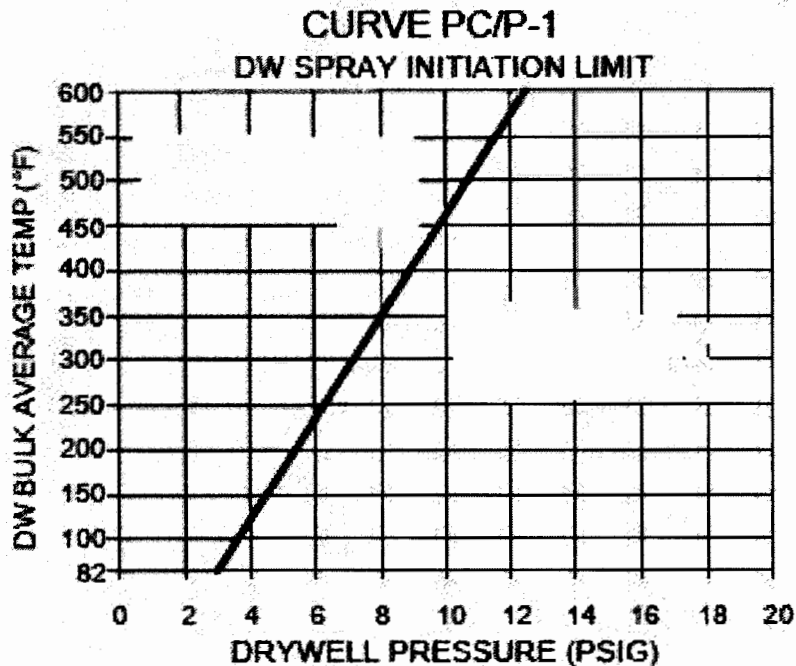
Points: 1.00

Unit 2 was operating at full power when a small break Loss of Coolant Accident (LOCA) occurred. The following conditions currently exist:

- Torus level is 17 feet and rising
- Drywell pressure is 9.8 psig and rising
- Drywell temperature indicated 165°F before TI-80146 "Drywell Bulk Average Temperature Indicator" failed.
- Point 119 on TI-2501 145°F
- Point 120 on TI-2501 150°F
- Point 121 on TI-2501 146°F
- Point 122 on TI-2501 150°F
- Point 123 on TI-2501 144°F
- Point 124 on TI-2501 151°F
- Point 126 on TI-2501 149°F
- Point 127 on TI-2501 162°F
- Point 136 on TI-2501 163°F
- Based on T-102 "Primary Containment Control" NOTE #27 below, the crew attempts to perform a manual calculation of Drywell Bulk Average Temperature using RT-O-40C-530-2 "Drywell Temperature Monitoring" but the calculation was invalid

#27

IF TI-80146(90146) IS OUT OF SERVICE, THEN USE
RT-O-40C-530 TO DETERMINE DW BULK AVG TEMP



EXAMINATION ANSWER KEY

2019 NRC SRO Exam Rev1

Evaluate these conditions to determine the appropriate action related to spraying the Drywell per T-102, "Primary Containment Control".

- A. Do **NOT** spray the Drywell since the safe side of the DWSIL curve cannot be verified per RT-O-40C-530-2.
- B. Do **NOT** spray the Drywell since Torus level is above the limit of T-102 "Primary Containment Control" for spraying the Drywell.
- C. Spray the Drywell after verifying the safe side of the DWSIL curve using TI-2501, Point 136 plus 10°F.
- D. Spray the Drywell after verifying the safe side of the DWSIL Curve using the hottest temperature indicated on TI-2501, Points 119-127.

Answer: A

Answer Explanation		
Correct:	A	RT-O-40C-530-2 precaution 4.2.2 states that if the calculation of Drywell Bulk Average Temperature is invalid, the safe side of the DWSIL curve cannot be verified. DO NOT SPRAY THE DRYWELL.
Distractors:	B	Per T-102, the Torus level limit for spraying the Drywell is 18 feet. If Drywell sprays are required and all other conditions are met, Torus level at 17 feet and rising would not prevent spraying the Drywell. Plausible If the candidate incorrectly uses any of the given values to determine that operation is in the safe side to the Drywell Spray curve. All given values will plot safe on the curve, however, RT-O-40C-530-2 precaution 4.2.2 states that if the calculation of Drywell Bulk Average Temperature is invalid, the safe side of the DWSIL curve cannot be verified. DO NOT SPRAY THE DRYWELL.
	C	TI-2501, Point 136 (plus 10 degrees F) can be used to calculate approximate drywell temperature for entering ON-120 or T-102, but not for spraying the drywell. Plausible If the candidate incorrectly uses PT 136 plus 10 degrees F which will plot on the safe side of the DWSIL curve, however, RT-O-40C-530-2 precaution 4.2.2 states that if the calculation of Drywell Bulk Average Temperature is invalid, the safe side of the DWSIL curve cannot be verified. DO NOT SPRAY THE DRYWELL.
	D	Using the hottest temperature from TI-2501 points 119-127 is an acceptable method of determining when to initiate RPV blowdown, but it is not acceptable for use on the DWSIL curve. Plausible If the candidate incorrectly uses the highest value of points 119-127 which is 163 degrees F which will plot on the safe side of the DWSIL curve, however, RT-O-40C-530-2 precaution 4.2.2 states that if the calculation of Drywell Bulk Average Temperature is invalid, the safe side of the DWSIL curve cannot be verified. DO NOT SPRAY THE DRYWELL.

EXAMINATION ANSWER KEY

2019 NRC SRO Exam Rev1

Question 9 Info																																															
Question Type:	Multiple Choice																																														
Status:	Active																																														
Always select on test?	No																																														
Authorized for practice?	No																																														
Points:	1.00																																														
Time to Complete:	0																																														
Difficulty:	1.00																																														
System ID:	994809																																														
User-Defined ID:	B NRC 2019																																														
Cross Reference Number:	295028 G2.4.20 / 295012 2.4.47																																														
Topic:	ILT-1560-11-009 Unit 2 was operating at full power when a small break Loss of Coolant Accident																																														
Num Field 1:																																															
Num Field 2:																																															
Text Field:	NRC-09-1																																														
Comments:	<table border="1"> <thead> <tr> <th colspan="4">Psychometrics</th> </tr> <tr> <th>Level of Knowledge</th> <th>Difficulty</th> <th>Time Allowance (minutes)</th> <th>SRO</th> </tr> </thead> <tbody> <tr> <td>High</td> <td></td> <td></td> <td>10CRF55.43(b) 5</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th colspan="4">Source Documentation</th> </tr> </thead> <tbody> <tr> <td>Source:</td> <td colspan="3"> <div> <div>New Exam item</div> <div>Previous NRC Exam</div> <div>Modified Bank</div> <div>Exam Bank</div> <div><input checked="" type="checkbox"/> ILT Exam Bank</div> </div> <div>Other</div> </td> </tr> <tr> <td>Reference(s):</td> <td colspan="3">T-102 (note #27); RT-O-40C-530-2</td> </tr> <tr> <td>Learning Objective:</td> <td colspan="3">ILT-1560-11</td> </tr> <tr> <td>K/A System:</td> <td>295012 - High Drywell Temperature</td> <td>Importance; / SRO</td> <td>RO 4.2</td> </tr> <tr> <td>K/A Statement:</td> <td colspan="3">2.4.47 - Ability to diagnosis and recognize trends in an accurate and timely manner utilizing the appropriate control room reference material.</td> </tr> <tr> <td>REQUIRED MATERIALS:</td> <td colspan="3">None</td> </tr> <tr> <td>Notes and Comments:</td> <td colspan="3">Curve is embedded to match the K/A. It is used to determine whether the D/W can be sprayed or not.</td> </tr> </tbody> </table>			Psychometrics				Level of Knowledge	Difficulty	Time Allowance (minutes)	SRO	High			10CRF55.43(b) 5	Source Documentation				Source:	<div> <div>New Exam item</div> <div>Previous NRC Exam</div> <div>Modified Bank</div> <div>Exam Bank</div> <div><input checked="" type="checkbox"/> ILT Exam Bank</div> </div> <div>Other</div>			Reference(s):	T-102 (note #27); RT-O-40C-530-2			Learning Objective:	ILT-1560-11			K/A System:	295012 - High Drywell Temperature	Importance; / SRO	RO 4.2	K/A Statement:	2.4.47 - Ability to diagnosis and recognize trends in an accurate and timely manner utilizing the appropriate control room reference material.			REQUIRED MATERIALS:	None			Notes and Comments:	Curve is embedded to match the K/A. It is used to determine whether the D/W can be sprayed or not.		
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REQUIRED MATERIALS:	None																																														
Notes and Comments:	Curve is embedded to match the K/A. It is used to determine whether the D/W can be sprayed or not.																																														

EXAMINATION ANSWER KEY

2019 NRC SRO Exam Rev1

10

Points: 1.00

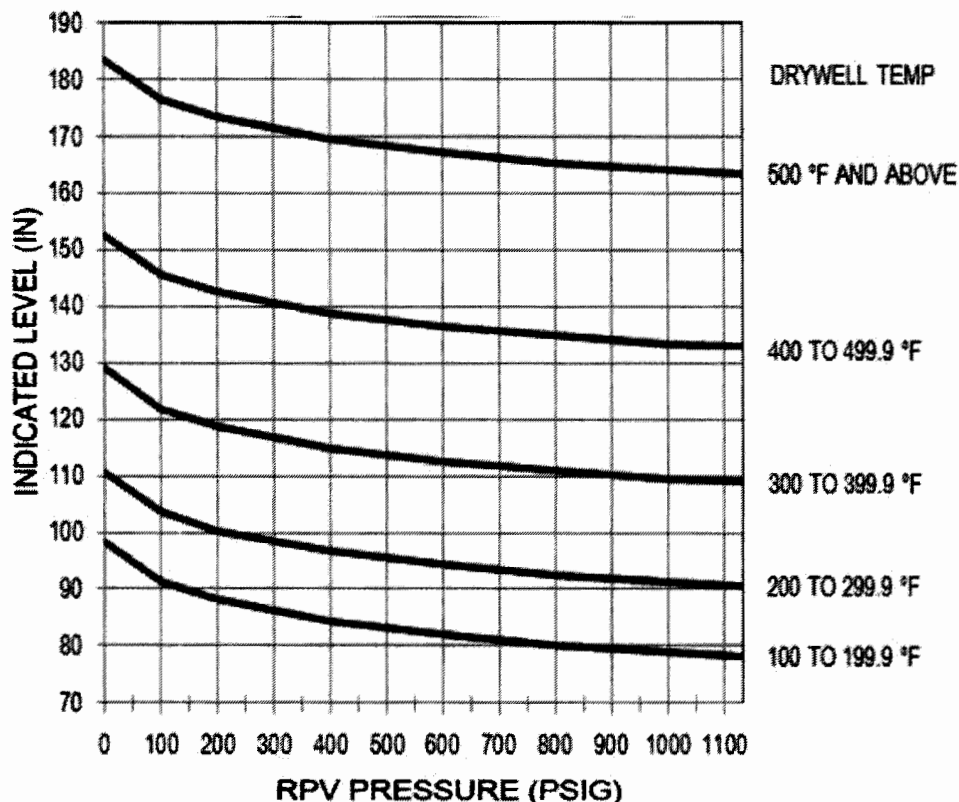
Unit 3 was operating at 100% power when a feedwater level control malfunction occurs.

Current plant conditions are as follows:

- RPV level as read on LI-2-2-3-86 is +90 inches
- All control rods are fully inserted
- RPV pressure is 1060 psig and rising slowly
- Drywell temperature is 125 degrees F

WHICH ONE of the following describes the direction to give the URO/PRO for RPV pressure control?

RPV LEVEL AT MSLs ON LI-2(3)-2-3-86



- A. Maintain reactor pressure below 1053 psig using the Bypass Jack per OT-102, "Reactor High Pressure".
- B. Maintain reactor pressure below 1053 psig using EHC Pressure Set per OT-102, "Reactor High Pressure".
- C. Reduce reactor pressure below 1050 psig using a single SRV and prolonged SRV opening per OT-110, "Reactor High Level".
- D. Reduce reactor pressure below 1050 psig using multiple SRVs and short-duration SRV openings per OT-110, "Reactor High Level".

Answer: C

EXAMINATION ANSWER KEY

2019 NRC SRO Exam Rev1

Answer Explanation		
Choice		Basis or Justification
Correct:	C	When RPV pressure reaches 1050 psig, OT-110, which is executed concurrently with T-101, "RPV Control", directs manual SRV operation using a single SRV (if possible) and prolonged SRV opening.
Distractors:	A	OT-110 Figure 1 an indicated level of +90 inches indicates that actual RPV level may be at or above the main steam lines. OT-110 directs closing the MSIVs if RPV level cannot be maintained below the bottom of the MSIVs (+108 inches), thereby taking away the use of BPVs. In addition, while OT-102 does direct maintaining reactor pressure below 1053 psig, since the reactor is scrammed, OT-102 is no longer applicable. OT-110 is executed concurrently with T-101 "RPV Control". Plausible if the candidate doesn't recall that OT-102 is exited following the Scram.
	B	OT-110 Figure 1 an indicated level of +90 inches indicates that actual RPV level may be at or above the main steam lines. OT-110 directs closing the MSIVs if RPV level cannot be maintain below the bottom of the MSIVs (+108 inches). In addition, while OT-102 does direct maintaining reactor pressure below 1053 psig, since the reactor is scrammed, OT-102 is no longer applicable. OT-110 is executed concurrently with T-101 "RPV Control". Plausible if the candidate doesn't recall that OT-102 is exited following the Scram.
	D	OT-110 directs prolonged SRV opening using a single SRV (or as few as possible) in order to minimize SRV tailpipe loading and the number of SRVs that are effected by higher than normal loads. Plausible if the candidate uses the standard pressure control guidance.

EXAMINATION ANSWER KEY

2019 NRC SRO Exam Rev1

Question 10 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	0
Difficulty:	0.00
System ID:	994304
User-Defined ID:	B NRC 2019
Cross Reference Number:	295008 2.4.4
Topic:	ILT-1540-4-010 SRO
Num Field 1:	0.00
Num Field 2:	0.00
Text Field:	ILT05-1 NRC Exam SRO#8

EXAMINATION ANSWER KEY

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Comments:	Psychometrics			
	Level of Knowledge	Difficulty	Time Allowance (minutes)	SRO
	Memory			10CRF55.43(b) 5
	Source Documentation			
	Source:	<div> <div>New Exam item</div> <div>Previous NRC Exam</div> <div>Modified Bank</div> <div>Exam Bank</div> <div><input checked="" type="checkbox"/> ILT Exam Bank</div> </div>		
	Reference(s):	OT-102; OT-110; T-101		
	Learning Objective:	PLOT - 1540.4		
	K/A System:	295008 - High Reactor Water Level	Importance; RO / SRO	4.7
	K/A Statement:	2.4.4 - Ability to recognize abnormal indications for system operating parameters that are entry level conditions for emergency and abnormal operating procedures		
	REQUIRED MATERIALS:	None		
	Notes and Comments:	<p>this is a K/A match because it requires the SRO candidate to take the abnormal level indication determine that is an entry condition for OT-110, "Reactor High Level" and then using the procedure determine how to stabilize plant conditions within the limitations of the procedure. The graph is embedded to provide information for decision points for the SRO to make, beyond entry conditions.</p>		

EXAMINATION ANSWER KEY

2019 NRC SRO Exam Rev1

11

Points: 1.00

Unit 2 is operating at 10% power when the following occurs:

- The PRO reports that the "Control Rod Drive Scram Solenoid Group 1" light is OUT on the 20C015 panel.

2 minutes later:

- LT 101-A, "RPV level transmitter" fails downscale.

Based on the above conditions which one of the following describes:

(1) the plant response

AND

(2) the direction the CRS will provide to the crew.

- A. (1) A Half Scram only is received
(2) bypass the half scram using AO 60F.2-2, "Defeat of a RPS Half Scram" for up to 12 hours.
- B. (1) A Half Scram only is received
(2) insert a half scram using GP-25, "Installation of Trips/Isolations to Satisfy Tech Spec/TRM Requirements for Inoperable Instrumentation" for up to 12 hours.
- C. (1) A Full Scram is received
(2) stabilize plant following the automatic Scram using T-100, "Scram"
- D. (1) A Full Scram is received
(2) stabilize plant following the automatic Scram using T-101, "RPV Control"

Answer: A

Answer Explanation

EXAMINATION ANSWER KEY

2019 NRC SRO Exam Rev1

Choice		Basis or Justification
Correct:	A	The level transmitter failing down scale generates a half scram signal. Since the blown fuse is in the same channel no rod motion results. A half scram can be bypass for up to 12 hours.
Distractors:	B	<p>The level transmitter failing down scale generates a half scram signal. Since the blown fuse is in the same channel no rod motion results.</p> <p>GP-25 is used to insert a half scram signal, It can be performed at anytime and can be in place longer than 12 hours. Plausible if the candidate does not understand the purpose of GP-25 and when it should be used and that there are no time limitations for how long the trip can be installed.</p>
	C	The blown fuse is in the same RPS channel as the failed instrument so no rod motion will occur. Plausible if the candidate does not understand the RPS logic and thinks that the blown fuse along with the half scram caused 1/4 of the control rods to insert and therefore a SDV high level scram signal resulting in a full scram. With the transient beginning at 10% the candidate may believe that RPV level would not drop below 1 inch and therefore be a T-100 entry. This fact is true but a full scram does not occur so the overall statement is wrong.
	D	The blown fuse is in the same RPS channel as the failed instrument so no rod motion will occur. Plausible if the candidate does not understand the RPS logic and thinks that the blown fuse along with the half scram caused 1/4 of the control rods to insert and therefore a SDV high level scram signal resulting in a full scram. With the transient beginning at 10% the candidate may believe that RPV level would drop below 1 inch and therefore be a T-101 entry. This fact is true but a full scram does not occur so the overall statement is wrong.

EXAMINATION ANSWER KEY

2019 NRC SRO Exam Rev1

Question 11 Info																															
Question Type:	Multiple Choice																														
Status:	Active																														
Always select on test?	No																														
Authorized for practice?	No																														
Points:	1.00																														
Time to Complete:	0																														
Difficulty:	1.00																														
System ID:	2078646																														
User-Defined ID:	B NRC 2019																														
Cross Reference Number:	212000 A2 19																														
Topic:	ILT 5060-10d. 001 SRO																														
Num Field 1:																															
Num Field 2:																															
Text Field:																															
Comments:	<table border="1"> <thead> <tr> <th colspan="4">Psychometrics</th> </tr> <tr> <th>Level of Knowledge</th> <th>Difficulty</th> <th>Time Allowance (minutes)</th> <th>SRO</th> </tr> </thead> <tbody> <tr> <td>HIGH</td> <td></td> <td></td> <td>10CRF55.43(b) 5</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th colspan="2">Source Documentation</th> </tr> </thead> <tbody> <tr> <td>Source:</td> <td> <input checked="" type="checkbox"/> New Exam item <input type="checkbox"/> Previous NRC Exam <input type="checkbox"/> Modified Bank <input type="checkbox"/> Exam Bank <input type="checkbox"/> Other <input type="checkbox"/> ILT Exam Bank </td> </tr> <tr> <td>Reference(s):</td> <td>M-1-S-54, M-352, Tech Spec section 3.3.1, AO 60F.2-2</td> </tr> <tr> <td>Learning Objective:</td> <td>PLOY 5060 10d</td> </tr> <tr> <td>K/A System:</td> <td>212000 - RPS Importance; RO / SRO 3.9</td> </tr> <tr> <td>K/A Statement:</td> <td>A2 19 - Ability to (a) predict the impacts of the following on the REACTOR PROTECTION SYSTEM; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Partial system activation (half-SCRAM)</td> </tr> <tr> <td>REQUIRED MATERIALS:</td> <td>None</td> </tr> <tr> <td>Notes and Comments:</td> <td>This meets the K/A because bypassing the failed instrument prevents an unnecessary scram due to a failed instrument. Operating the plant with a tripped instrument causing a half scram raises the PRA risk value. Therefore taking the action to bypass the failed instrument does "mitigate the consequences of those abnormal conditions".</td> </tr> </tbody> </table>			Psychometrics				Level of Knowledge	Difficulty	Time Allowance (minutes)	SRO	HIGH			10CRF55.43(b) 5	Source Documentation		Source:	<input checked="" type="checkbox"/> New Exam item <input type="checkbox"/> Previous NRC Exam <input type="checkbox"/> Modified Bank <input type="checkbox"/> Exam Bank <input type="checkbox"/> Other <input type="checkbox"/> ILT Exam Bank	Reference(s):	M-1-S-54, M-352, Tech Spec section 3.3.1, AO 60F.2-2	Learning Objective:	PLOY 5060 10d	K/A System:	212000 - RPS Importance; RO / SRO 3.9	K/A Statement:	A2 19 - Ability to (a) predict the impacts of the following on the REACTOR PROTECTION SYSTEM; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Partial system activation (half-SCRAM)	REQUIRED MATERIALS:	None	Notes and Comments:	This meets the K/A because bypassing the failed instrument prevents an unnecessary scram due to a failed instrument. Operating the plant with a tripped instrument causing a half scram raises the PRA risk value. Therefore taking the action to bypass the failed instrument does "mitigate the consequences of those abnormal conditions".
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EXAMINATION ANSWER KEY

2019 NRC SRO Exam Rev1

EXAMINATION ANSWER KEY

2019 NRC SRO Exam Rev1

12

Points: 1.00

Unit 2 was initially operating at 100% power when the following occurs:

- The reactor scrams due to a loss of all off-site power
- Only the E-2 Emergency Diesel Generator starts
- RPV level is -70 inches and dropping slowly.
- 2A DC POWER PANEL LO VOLTAGE (209 C-3) is in alarm.
- 2A DC Bus voltage at Panel 20C021 (CSR) is 0 VDC.

Based on the above plant conditions, assess the plant impact and select the actions required to mitigate the impact

- A. RCIC will automatically start
Control RPV level with RCIC using RRC 13.1-2, "RCIC System Operation During a Plant Transient". ONLY
- B. RCIC will automatically start
Control RPV level with RCIC using RRC 13.1-2, "RCIC System Operation During a Plant Transient" AND
Swap RCIC suction to the Torus in accordance with SE-11, "Loss of Off-site power".
- C. RCIC will NOT automatically start
Control RPV level with HPCI using RRC 23.1-2, "HPCI System Operation During a Plant Transient". ONLY
- D. RCIC will NOT automatically start
Control RPV level with HPCI using RRC 23.1-2, "HPCI System Operation During a Plant Transient". AND Swap HPCI suction to the Torus in accordance with SE-11, "Loss of Off-site power".

Answer: D

Answer Explanation		
Choice		Basis or Justification
Correct:	D	The SRO candidate must recognize that with low battery voltage on the 2A battery, RCIC will be INOP and not start. Based on that knowledge the SRO candidate must know that the strategy is to use HPCI. Additionally with only one D/G operating the SRO candidate must know that the strategy is to preserve CST level by transferring HPCI suction to the Torus. With Torus temperature low, the appropriate strategy is to use HPCI with suction from the torus.
Distractors:	A	RCIC is not available. Plausible if the candidate does not recall that power to RCIC is from the 2A battery. If RCIC were available then aligning it for injection would be part of the strategy for level control. Plausible if the SRO candidate does not recall the action required in SE-11 for maintain CST inventory.
	B	RCIC is not available. Plausible if the candidate does not recall that power to RCIC is from the 2A battery. If RCIC were available then aligning it for injection and aligning RCIC suction to the Torus would be the strategy for level control.
	C	With RCIC unavailable, aligning HPCI for injection is part of the level control strategy. Plausible if the SRO candidate does not recall the SE-11 guidance for maintaining CST inventory.

EXAMINATION ANSWER KEY

2019 NRC SRO Exam Rev1

Question 12 Info																															
Question Type:	Multiple Choice																														
Status:	Active																														
Always select on test?	No																														
Authorized for practice?	No																														
Points:	1.00																														
Time to Complete:	0																														
Difficulty:	1.00																														
System ID:	2086275																														
User-Defined ID:	B NRC 2019																														
Cross Reference Number:	217000 A2.05																														
Topic:	ILT 5013 10e 002 SRO. Given a set of conditions (a) predict the impacts of the follow																														
Num Field 1:																															
Num Field 2:																															
Text Field:																															
Comments:	<table border="1"> <thead> <tr> <th colspan="4">Psychometrics</th> </tr> <tr> <th>Level of Knowledge</th> <th>Difficulty</th> <th>Time Allowance (minutes)</th> <th>SRO</th> </tr> </thead> <tbody> <tr> <td>High</td> <td></td> <td></td> <td>10CRF55.43(b) 5</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th colspan="2">Source Documentation</th> </tr> </thead> <tbody> <tr> <td>Source:</td> <td> <div> <input checked="" type="checkbox"/> New Exam item <div>Previous</div> </div> <div> <input type="checkbox"/> NRC Exam <div>Other Exam</div> </div> <div> <input type="checkbox"/> Modified Bank <div></div> </div> <div> <input type="checkbox"/> Bank <div></div> </div> <div> <input type="checkbox"/> ILT Exam Bank <div></div> </div> </td> </tr> <tr> <td>Reference(s):</td> <td>SE-13, SE-11</td> </tr> <tr> <td>Learning Objective:</td> <td>PLOT-5013-10e</td> </tr> <tr> <td>K/A System:</td> <td> <div>217000 - RCIC</div> <div>Importance; RO / SRO 3.3</div> </td> </tr> <tr> <td>K/A Statement:</td> <td>A2.05 Ability to (a) predict the impacts of the following on the REACTOR CORE ISOLATION COOLING SYSTEM (RCIC); and (b) based on those predictions, use procedures to correct, control or mitigate the consequences of those abnormal conditions or operations; D.C. power loss</td> </tr> <tr> <td>REQUIRED MATERIALS:</td> <td>None</td> </tr> <tr> <td>Notes and Comments:</td> <td>None</td> </tr> </tbody> </table>			Psychometrics				Level of Knowledge	Difficulty	Time Allowance (minutes)	SRO	High			10CRF55.43(b) 5	Source Documentation		Source:	<div> <input checked="" type="checkbox"/> New Exam item <div>Previous</div> </div> <div> <input type="checkbox"/> NRC Exam <div>Other Exam</div> </div> <div> <input type="checkbox"/> Modified Bank <div></div> </div> <div> <input type="checkbox"/> Bank <div></div> </div> <div> <input type="checkbox"/> ILT Exam Bank <div></div> </div>	Reference(s):	SE-13, SE-11	Learning Objective:	PLOT-5013-10e	K/A System:	<div>217000 - RCIC</div> <div>Importance; RO / SRO 3.3</div>	K/A Statement:	A2.05 Ability to (a) predict the impacts of the following on the REACTOR CORE ISOLATION COOLING SYSTEM (RCIC); and (b) based on those predictions, use procedures to correct, control or mitigate the consequences of those abnormal conditions or operations; D.C. power loss	REQUIRED MATERIALS:	None	Notes and Comments:	None
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Source Documentation																															
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REQUIRED MATERIALS:	None																														
Notes and Comments:	None																														

EXAMINATION ANSWER KEY

2019 NRC SRO Exam Rev1

13

Points: 1.00

Both Units are in Mode 1

- Station Battery 2CD01 terminal voltage on float is 124 VDC
- Station Battery 2CD01 float voltage for the pilot cell is 2.0 VDC

What is/are the most limiting required action(s)?

- A. The 2C battery remains operable. Direct maintenance to investigate lower than expected terminal voltage.
- B. Enter applicable Technical Specification and verify 2C battery cell parameters are within limits within 24 hours.
- C. Enter the applicable Technical Specification for both Units and restore 2C battery to operable within 2 hours for Unit 2 and 12 hours for Unit 3.
- D. Enter applicable Technical Specification for both Units and immediately declare affected distribution systems inoperable and be in Mode 3 in 12 hours.

Answer: C

Answer Explanation		
Choice	Basis or Justification	
Correct :	C	Pilot cell float voltage <2.07 does not meet Category C allowable limits for each connected cell in TS 3.8.6. This requires entry into condition B in which the battery is declared inoperable. This then causes Unit 2 DC Div I electrical power subsystem to become inoperable. TS 3.8.4 would be entered. Condition C would be entered on Unit 2 requiring restoration of the Unit 2 DC electrical power subsystem in 2 hours. TS 3.8.4 condition B would be entered on Unit 3 requiring restoration of the Unit 2 DC electrical power subsystem in 12 hours.
Distract ors:	A	Plausible if candidate misapplies the Tech Specs, since total terminal float voltage of 124 VDC is greater than the 123.5 VDC terminal float voltage of surveillance requirement 3.8.4.1. However since the pilot cell voltage is below category C limits in Tech Spec 3.8.6, the battery is declared inoperable immediately.
	B	Plausible if candidate misapplies Tech Spec 3.8.6 and only enters condition 'A' where the parameters are not within category A or B limits and to verify all cells meet category C limits in 24 hours. Since one cell is already outside category C limits, condition B is entered and the Battery is declared inoperable immediately.
	D	Plausible if candidate misapplies Tech Spec 3.8.4 condition D. Mode 3 would be required if condition C was not met in 2 hours. This would then require Unit 2 to be in Mode 3 in 14 hours. (2 hours condition C + 12 hours condition D). Unit 3 would be required to be in Mode 3 if condition B was not met in 24 hours. (12 hours condition B + 12 hours condition D)

EXAMINATION ANSWER KEY

2019 NRC SRO Exam Rev1

Question 13 Info																															
Question Type:	Multiple Choice																														
Status:	Active																														
Always select on test?	No																														
Authorized for practice?	No																														
Points:	1.00																														
Time to Complete:	3																														
Difficulty:	2.00																														
System ID:	994165																														
User-Defined ID:	B NRC 2019																														
Cross Reference Number:	263000 2.2.22																														
Topic:	ILT-5057--8-003 SRO 2C battery cell at 2vdc																														
Num Field 1:																															
Num Field 2:																															
Text Field:																															
Comments:	<table border="1"> <thead> <tr> <th colspan="4">Psychometrics</th> </tr> <tr> <th>Level of Knowledge</th> <th>Difficulty</th> <th>Time Allowance (minutes)</th> <th>SRO</th> </tr> </thead> <tbody> <tr> <td>HIGH</td> <td></td> <td></td> <td>10CRF55.43(b) 2</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th colspan="2">Source Documentation</th> </tr> </thead> <tbody> <tr> <td>Source:</td> <td> <div> <div>New Exam item</div> <div>Modified Bank</div> <div>X ILT Exam Bank</div> </div> <div> <div>Previous NRC Exam</div> <div>Other Exam Bank</div> </div> </td> </tr> <tr> <td>Reference(s):</td> <td>Tech Specs 3.8.4, 3.8.6 and bases</td> </tr> <tr> <td>Learning Objective:</td> <td>PLOT - 5057-14</td> </tr> <tr> <td>K/A System:</td> <td> <div>263000 - DC Electrical Distribution</div> <div>Importance; RO / SRO 4.7</div> </td> </tr> <tr> <td>K/A Statement:</td> <td>2.2.22 - Knowledge of limiting conditions for operations and safety limits</td> </tr> <tr> <td>REQUIRED MATERIALS:</td> <td>Tech Spec section 3.8.6, 3.8.4 Unit 2 and 3</td> </tr> <tr> <td>Notes and Comments:</td> <td>None</td> </tr> </tbody> </table>			Psychometrics				Level of Knowledge	Difficulty	Time Allowance (minutes)	SRO	HIGH			10CRF55.43(b) 2	Source Documentation		Source:	<div> <div>New Exam item</div> <div>Modified Bank</div> <div>X ILT Exam Bank</div> </div> <div> <div>Previous NRC Exam</div> <div>Other Exam Bank</div> </div>	Reference(s):	Tech Specs 3.8.4, 3.8.6 and bases	Learning Objective:	PLOT - 5057-14	K/A System:	<div>263000 - DC Electrical Distribution</div> <div>Importance; RO / SRO 4.7</div>	K/A Statement:	2.2.22 - Knowledge of limiting conditions for operations and safety limits	REQUIRED MATERIALS:	Tech Spec section 3.8.6, 3.8.4 Unit 2 and 3	Notes and Comments:	None
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REQUIRED MATERIALS:	Tech Spec section 3.8.6, 3.8.4 Unit 2 and 3																														
Notes and Comments:	None																														

EXAMINATION ANSWER KEY

2019 NRC SRO Exam Rev1

14

Points: 1.00

A Unit 2 Plant Startup is in-progress, the following conditions exist on the Wide Range neutron monitors:

- WRNM A - 3.91 E1
 - WRNM B - 4.24 E1
 - WRNM C - 1.00 E3
 - WRNM D - 3.81 E1
 - WRNM E - 3.83 E1
 - WRNM F - 3.81 E1
 - WRNM G - 3.93 E1
 - WRNM H - 3.77 E1
- The "C" WRNM is bypassed

Five minutes later, with no rod motion, the "G" WRNM is reading 1.00 E3.

Choose the correct statement concerning this situation.

- A. The startup can continue, there is NO Tech Spec action required.
- B. The startup can continue the WRNM "C" and "G" must be place in the tripped condition and remained tripped until the Reactor Mode switched in "RUN"
- C. The startup can continue, place the "G" WRNM in the tripped condition within 12 hours.
- D. The startup can NOT continue, suspend control rod withdraw immediately.

Answer: C

Answer Explanation		
Choice		Basis or Justification
Correct:	C	Three WRNM channels are required per trip system for RPS. With the "C" & "G" WRNM inop in the same trip system action must be taken to place the "G" WRNM in trip since the "C" WRNM is already bypassed
Distractors :	A	Plausible if the candidate does not understand the logic arrangement for the WRNMs and does not understand that the "C" and "G" monitors are in the same trip system. One WRNM must be tripped and the other bypassed.
	B	Plausible if the candidate believes that both the "C" and "G" monitors must be placed in trip. Only one monitor must be tripped the other monitor should be bypassed. Plausible if the candidate believes that this is one of the required monitors. then the monitor is required to be returned to operable within 4 hours per 3.3.1.2
	D	Plausible if the candidate believes that Tech Spec 3.3.1.2 requires 3 WRNM per channel instead of a total of 3 WRNM.

EXAMINATION ANSWER KEY

2019 NRC SRO Exam Rev1

Question 14 Info																															
Question Type:	Multiple Choice																														
Status:	Active																														
Always select on test?	No																														
Authorized for practice?	No																														
Points:	1.00																														
Time to Complete:	0																														
Difficulty:	1.00																														
System ID:	2096146																														
User-Defined ID:	B NRC 2019																														
Cross Reference Number:	215003 2.2.44																														
Topic:	ILT - 5060C-14-002-SRO																														
Num Field 1:																															
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Comments:	<table border="1"> <thead> <tr> <th colspan="4">Psychometrics</th> </tr> <tr> <th>Level of Knowledge</th> <th>Difficulty</th> <th>Time Allowance (minutes)</th> <th>RO</th> </tr> </thead> <tbody> <tr> <td>High</td> <td></td> <td></td> <td>10CFR 55.43(b) 2</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th colspan="2">Source Documentation</th> </tr> </thead> <tbody> <tr> <td>Source:</td> <td> <div> <div>New Exam item</div> <div>Modified Bank</div> <div>Bank</div> <div><input checked="" type="checkbox"/> ILT Exam Bank</div> </div> <div>Previous NRC Exam</div> <div>Other Exam</div> </td> </tr> <tr> <td>Reference(s):</td> <td>Tech Specs and bases</td> </tr> <tr> <td>Learning Objective:</td> <td>PLOT - 5060C-14</td> </tr> <tr> <td>K/A System:</td> <td> <div>215003 - IRM</div> <div>Importance; RO / SRO</div> <div>4.4</div> </td> </tr> <tr> <td>K/A Statement:</td> <td>2.2.44 - Ability to interpret control room indications to verify the status and operation of a system, and understand how operator actions and directives affect plant and system conditions</td> </tr> <tr> <td>REQUIRED MATERIALS:</td> <td>Tech Spec sections 3.3.1.1 and 3.3.1.2 with the setpoints blocked out.</td> </tr> <tr> <td>Notes and Comments:</td> <td>None</td> </tr> </tbody> </table>			Psychometrics				Level of Knowledge	Difficulty	Time Allowance (minutes)	RO	High			10CFR 55.43(b) 2	Source Documentation		Source:	<div> <div>New Exam item</div> <div>Modified Bank</div> <div>Bank</div> <div><input checked="" type="checkbox"/> ILT Exam Bank</div> </div> <div>Previous NRC Exam</div> <div>Other Exam</div>	Reference(s):	Tech Specs and bases	Learning Objective:	PLOT - 5060C-14	K/A System:	<div>215003 - IRM</div> <div>Importance; RO / SRO</div> <div>4.4</div>	K/A Statement:	2.2.44 - Ability to interpret control room indications to verify the status and operation of a system, and understand how operator actions and directives affect plant and system conditions	REQUIRED MATERIALS:	Tech Spec sections 3.3.1.1 and 3.3.1.2 with the setpoints blocked out.	Notes and Comments:	None
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REQUIRED MATERIALS:	Tech Spec sections 3.3.1.1 and 3.3.1.2 with the setpoints blocked out.																														
Notes and Comments:	None																														

EXAMINATION ANSWER KEY

2019 NRC SRO Exam Rev1

15

Points: 1.00

Unit 2 is operating at 100%. Residual Heat Removal system surveillance test results indicate the following pump flow rates at a system discharge corresponding to a reactor pressure of 20 psig:

A RHR Pump - 8600 gpm
C RHR Pump - 8500 gpm
B RHR Pump - 8450 gpm
D RHR Pump - 8800 gpm

Which of the following describes the required actions for the noted conditions?

- A. Restore ONLY "A" Loop RHR to OPERABLE status within 7 days.
- B. Restore ONLY "B" Loop RHR to OPERABLE status within 7 days.
- C. Restore BOTH RHR Loops to OPERABLE status within 7 days.
- D. Enter LCO 3.0.3 immediately

Answer: C

Answer Explanation		
Choice		Basis or Justification
Correct:	C	The candidate must determine that there is a pump in each LPCI loop with a flow below the acceptable value. This would require both loops to be returned to operable status within the 7 day Tech Spec limit
Distractors :	A	Plausible if the candidate believes that only one pump in the "A" loop below the required value or does not understand the arrangement on RHR pumps and believes that both pumps with low flow are in the "A" loop.
	B	Plausible if the candidate believes that only one pump in the "B" loop below the required value or does not understand the arrangement on RHR pumps and believes that both pumps with low flow are in the "B" loop.
	D	Plausible if the candidate believes that based on the information having a pump in each loop below the limit means that there are two inop subsystems without applying the the guidance in condition "A" that allows one pump in each loop to be inop.

EXAMINATION ANSWER KEY

2019 NRC SRO Exam Rev1

Question 15 Info																																																			
Question Type:	Multiple Choice																																																		
Status:	Active																																																		
Always select on test?	No																																																		
Authorized for practice?	No																																																		
Points:	1.00																																																		
Time to Complete:	0																																																		
Difficulty:	1.00																																																		
System ID:	2078794																																																		
User-Defined ID:	B NRC 2019																																																		
Cross Reference Number:	209001 2.2.42																																																		
Topic:	ILT-5010-13-001 SRO																																																		
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EXAMINATION ANSWER KEY

2019 NRC SRO Exam Rev1

16

Points: 1.00

The following conditions existed following a Loss of Coolant Accident on Unit 3:

- Drywell pressure is 4.5 psig and rising
- Torus pressure is 2.5 psig and rising
- RPV pressure is 900 psig and lowering
- RPV level is -10 inches and lowering
- Drywell temperature is 195 degrees F and rising
- Torus water temperature is 100 degrees F and rising
- Torus cooling has been placed in service one pump on each loop

2 minutes later the following conditions exist:

- Drywell pressure is 18 psig and rising
- Torus pressure is 16 psig and rising
- RPV pressure is 300 psig and lowering
- RPV level is +40 inches and rising
- Drywell temperature is 275 degrees F and rising
- Torus water temperature is 102 degrees F and rising

The CRS will direct the Reactor Operator to first _____.

- A. Secure ECCS pumps not required to assure adequate core cooling in accordance with RPV Pressure Control leg of T-101 "RPV Control"
- B. Maximize torus cooling in accordance with Torus Temperature leg of T-102 "Primary Containment Control"
- C. Place Torus Sprays in service in accordance with Primary Containment Pressure leg of T-102 "Primary Containment Control"
- D. Place Drywell Sprays in service in accordance with Drywell Temperature leg of T-102 "Primary Containment Control"

Answer: A

Answer Explanation

EXAMINATION ANSWER KEY

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Choice		Basis or Justification
Correct:	A	All ECCS pumps are injecting into the RPV as a LOCA signal of 2 psig in the Drywell and Reactor Pressure < 450 psig has been met. The RPV level of +40 inches and rising indicates that not all injection is necessary to maintain adequate core cooling. In accordance with T-101 "RPV Control" you should secure ECCS injection from systems not required to assure adequate core cooling.
Distractors	B	Plausible as T-102 "Primary Containment Control" does direct maximizing Torus cooling when Torus temperature is > 95 degrees F. However due to the LOCA signal received, all ECCS has aligned for injection. This LOCA signal prevents the MO-154 from being closed for 5 minutes from receipt of the LOCA signal. Therefore Torus cooling cannot be lined up at this time.
	C	Plausible as T-102 "Primary Containment Control" does direct placing Torus Sprays in service. The high Torus pressure becomes a concern as it could violate the PC/P-2 curve at which time we would have to perform a Blowdown in accordance with T-102. However due to the LOCA signal received, all ECCS has aligned for injection. This LOCA signal prevents the MO-154 from being closed for 5 minutes from receipt of the LOCA signal. Therefore Torus Sprays cannot be lined up at this time.
	D	Plausible as T-102 "Primary Containment Control" does direct placing Drywell Sprays in service. The high Drywell temperature becomes a concern as if it raises above 340 degrees F we would have to perform a Blowdown in accordance with T-102. However due to the LOCA signal received, all ECCS has aligned for injection. This LOCA signal prevents the MO-154 from being closed for 5 minutes from receipt of the LOCA signal. Therefore Drywell Sprays cannot be lined up at this time.

EXAMINATION ANSWER KEY

2019 NRC SRO Exam Rev1

Question 16 Info																																															
Question Type:	Multiple Choice																																														
Status:	Active																																														
Always select on test?	No																																														
Authorized for practice?	No																																														
Points:	1.00																																														
Time to Complete:	0																																														
Difficulty:	1.00																																														
System ID:	2095808																																														
User-Defined ID:	B NRC 2019																																														
Cross Reference Number:	219000 A2.14																																														
Topic:	ILT 5010-10h-003 B NRC SRO																																														
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REQUIRED MATERIALS:	None																																														
Notes and Comments:	None																																														

EXAMINATION ANSWER KEY

2019 NRC SRO Exam Rev1

17

Points: 1.00

A startup is in progress on Unit 3. The following condition exist:

Reactor power 2%
Reactor pressure 700 psig
Identified leakage 20 gpm
Unidentified leakage 4 gpm

Unidentified leakage has increased 3 gpm in the last 12 hours

A leak is identified on RWCU piping upstream of MO-3-12-15, "RWCU Inboard Isolation"

Select the most limiting required action for the above conditions

- A. No actions are required.
- B. Reduce the rise in Unidentified Leakage within 4 hours ONLY.
- C. Reduce the rise in Unidentified Leakage within 4 hours OR verify the source of the Unidentified Leakage is not "Service Sensitive Steel" within 4 hours.
- D. Be in Mode 3 in 12 hours.

Answer: D

Answer Explanation		
Choice	Basis or Justification	
Correct :	D	A leak on the RWCU line before the first isolation valve is Pressure Boundary Leakage. No pressure boundary leakage is permitted, therefore the Reactor must be in Mode 3 in 12 hours.
Distract ors:	A	Plausible if the candidate does not recognize that the leakage is "Pressure Boundary Leakage". All other limits are acceptable.
	B	Plausible if the candidate does not recognize that the limit for the rise in Unidentified Leakage only applies in Mode 1 and doesn't understand that the leakage is boundary leakage.
	C	Plausible if the candidate does not recognize that the limit for the rise in Unidentified Leakage only applies in Mode 1 and doesn't understand that the leakage is boundary leakage.

EXAMINATION ANSWER KEY

2019 NRC SRO Exam Rev1

Question 17 Info																																							
Question Type:	Multiple Choice																																						
Status:	Active																																						
Always select on test?	No																																						
Authorized for practice?	No																																						
Points:	1.00																																						
Time to Complete:	0																																						
Difficulty:	1.00																																						
System ID:	2078825																																						
User-Defined ID:	B NRC 2019																																						
Cross Reference Number:	204000 2.2.40																																						
Topic:	ILT-5012-13-001 SRO Given a set of conditions related to the Reactor Water																																						
Num Field 1:																																							
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REQUIRED MATERIALS:	Tech Spec section 3.4.4																																						
Notes and Comments:	None																																						

EXAMINATION ANSWER KEY

2019 NRC SRO Exam Rev1

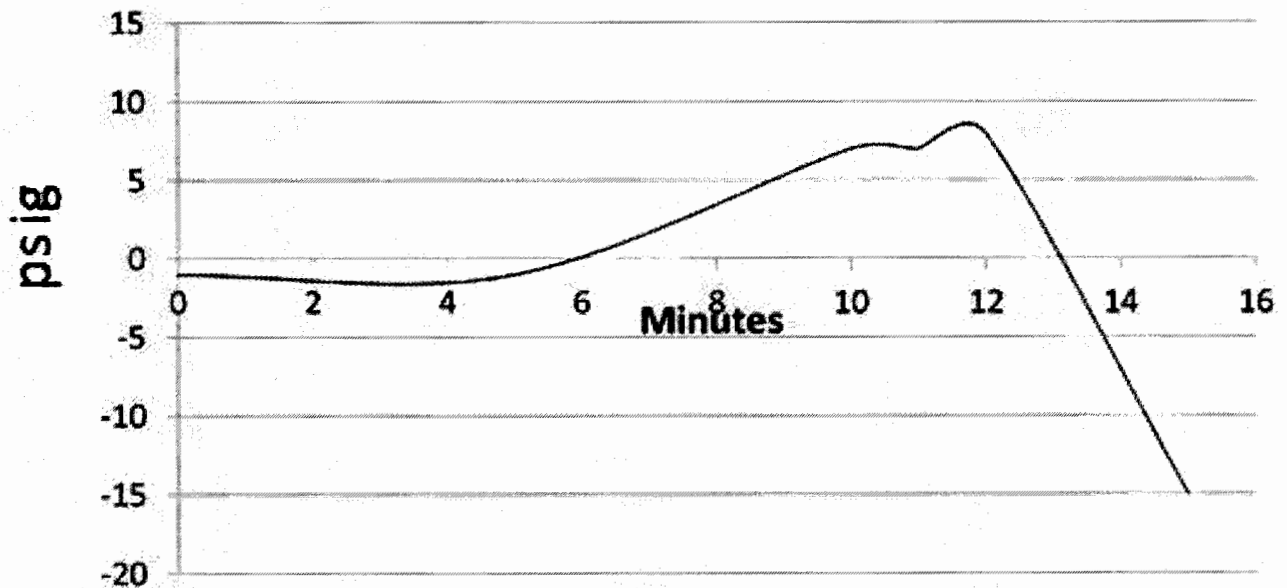
18

Points: 1.00

A loss of cooling to the Off-Gas Recombiner Condenser has occurred.

Using the chart determine the appropriate actions. Assume the loss of cooling began at T=0.

Recombiner Condenser Pressure



- A. MO-2990A, "Steam Supply" has isolated.
Reduce reactor power using GP-9-2, "Fast Reactor Power Reduction".
- B. The recycle valve (CV-2768) failed to open.
Open the recycle valve per the ARC and return the Jet Compressors to service using AO 8.1-2, "Recovery from Off-Gas System Isolation".
- C. The recycle valve (CV-2768) opened and is returning condenser pressure to normal.
Continue to monitor operations of the Off-Gas system per SO 8.8.A-2, "Off-Gas System Routine Inspection".
- D. MO-2990A, "Steam Supply" has isolated.
Swap Off-Gas Jet Compressors using AO 8.1-2, "Recovery from Off-Gas System Isolation".

EXAMINATION ANSWER KEY

2019 NRC SRO Exam Rev1

Answer: A

Answer Explanation

Choice		Basis or Justification
Correct:	A	The recycle valve opened as indicated by the flat spot on the curve at approx. 7 psig. The rise in pressure indicates that the recycle valve was not enough to control Recombiner Condenser pressure. When Recombiner Pressure reaches 8 psig. MO-2990 isolates. There are no alternate components in the Recombiner System that can be placed in service for this condition. This will cause main condenser vacuum to drop and require entry into OT-106, "Condenser Low Vacuum" and require a power reduction.
Distractors :	B	The recycle valve did open to try and control pressure as evidenced by the flat spot on the graph. plausible if the candidate can not correctly diagnose plant conditions based on the graph. Returning a jet compressor to service will not remedy the problem. Plausible if candidate believes that returning the jet compressor to service and therefore restoring system flow will improve system performance and reduce system flow.
	C	The recycle valve is not successfully controlling Recombiner pressure as indicated by the rise in system pressure to 8 psig and then the rapid drop as MO-2990 isolated. plausible if the candidate believes that the drop in pressure at 12 minutes is the recycle valve operating properly instead of the isolation causing the drop in pressure.
	D	The MO-2990 is isolated but there are not alternate components in the Recombiner System that can be placed in service to restore the system. Plausible if the candidate does not understand the flowpath through the recombiner and believes that there is a second recombiner condenser just as there is a second jet compressor.

EXAMINATION ANSWER KEY

2019 NRC SRO Exam Rev1

Question 18 Info																															
Question Type:	Multiple Choice																														
Status:	Active																														
Always select on test?	No																														
Authorized for practice?	No																														
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Difficulty:	1.00																														
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User-Defined ID:	B NRC 2019																														
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EXAMINATION ANSWER KEY

2019 NRC SRO Exam Rev1

19

Points: 1.00

Prior to inserting the TN-68 Spent Fuel Storage cask into the Fuel Pool Cask Pit per procedure SF-221 "Spent Fuel Casks TN-68 Loading and Transport Operations",

Secondary Containment is ____ (1) ____

AND

Fuel Pool Cooling is ____ (2) ____.

- A. (1) required
(2) maximized
- B. (1) required
(2) secured
- C. (1) NOT required
(2) maximized
- D. (1) NOT required
(2) secured

Answer: B

Answer Explanation		
Choice		Basis or Justification
Correct:	B	Procedure SF-221 requires that Secondary Containment be operable and Fuel Pool Cooling system secured
Distractors	A	Plausible if the candidate believes that fuel pool cooling would be need to maximized to compensate for the added mass in the fuel pool.
	C	Plausible if candidate believes the Fuel Storage cask to be listed in FH-35 "Control of Material Movement in the Fuel Pool" Table 1, which lists loads that can be moved without Secondary Containment operable. Plausible if the candidate believes that fuel pool cooling would be need to maximized to compensate for the added mass in the fuel pool.
	D	Plausible if candidate believes the Fuel Storage cask to be listed in FH-35 "Control of Material Movement in the Fuel Pool" Table 1, which lists loads that can be moved without Secondary Containment operable.

EXAMINATION ANSWER KEY

2019 NRC SRO Exam Rev1

Question 19 Info																															
Question Type:	Multiple Choice																														
Status:	Active																														
Always select on test?	No																														
Authorized for practice?	No																														
Points:	1.00																														
Time to Complete:	0																														
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User-Defined ID:	B NRC 2019																														
Cross Reference Number:	2.1.42																														
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Num Field 1:	0.00																														
Num Field 2:	0.00																														
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REQUIRED MATERIALS:	None																														
Notes and Comments:	None																														

EXAMINATION ANSWER KEY

2019 NRC SRO Exam Rev1

20

Points: 1.00

Which one of the following activities requires a Temporary Configuration Change (TCC) per CC-AA-112 "Temporary Configuration Changes"?

- A. Installation and removal of a jumper in accordance with an approved Surveillance Test procedure.
- B. Changing a Control Room alarm setpoint that is NOT in direct support of a Maintenance Work Order.
- C. Installation and removal of Measurement and Test Equipment (M&TE) in accordance with an approved Surveillance Test procedure.
- D. A temporary configuration change included with an Operations Clearance that does NOT affect the system beyond the clearance boundary.

Answer: B

Answer Explanation		
Choice		Basis or Justification
Correct:	B	Per CC-AA-112, this is <u>NOT</u> an excluded activity and therefore requires a TCC.
Distractors:	A	Plausible as electrical jumpers themselves are listed as <u>not</u> a Controlled Exclusion per CC-AA-112(step 4.2.12). However, since these jumpers are part of a Surveillance Test (step 4.2.3) it is an excluded activity and therefore does <u>NOT</u> require a TCC.
	C	Plausible as temporary instruments that are used to replace or supplement existing plant instruments that are used to determine the way the plant is operated are controlled under CC-AA-112. However since this is M&TE that is installed and removed in accordance with an approved procedure, per CC-AA-112 (step 4.2.1), this is an excluded activity and therefore does <u>NOT</u> require a TCC.
	D	Plausible since temporary configuration changes are controlled per CC-AA-112. However since the temporary configuration change is included in an Operations Clearance the does not affect the system beyond the clearance boundary, it is an excluded activity and therefore does <u>NOT</u> require a TCC per CC-AA-112 (4.2.6)

EXAMINATION ANSWER KEY

2019 NRC SRO Exam Rev1

Question 20 Info																																																			
Question Type:	Multiple Choice																																																		
Status:	Active																																																		
Always select on test?	No																																																		
Authorized for practice?	No																																																		
Points:	1.00																																																		
Time to Complete:	0																																																		
Difficulty:	0.00																																																		
System ID:	1432855																																																		
User-Defined ID:	B NRC 2019																																																		
Cross Reference Number:	2.2.5																																																		
Topic:	ILT-1570-19-002 SRO A CERT																																																		
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REQUIRED MATERIALS:	None																																																		
Notes and Comments:	None																																																		

EXAMINATION ANSWER KEY

2019 NRC SRO Exam Rev1

21

Points: 1.00

Unit 3 is operating at 100% power

The following indications are observed:

- Main Steam Line radiation monitors (RR-3-17-252) indicate 5 E+3 mR/hr.
- "Main Steam Line HI Radiation" alarm at Panel 318 D-2 is received.
- Air Ejector Discharge radiation monitor (RR-3-17-152) indicates 30 mR/hr.

Which one of the following describes the potential reason for the above indications and what procedural guidance is required to be directed?

- A. A resin injection has occurred; lower power in accordance with GP-9-3, "Fast Reactor Power Reduction" using flow and rods.
- B. A resin injection has occurred; lower power in accordance with GP-9-3, "Fast Reactor Power Reduction" using rods ONLY.
- C. Fuel cladding damage has occurred; lower power in accordance with GP-9-3, "Fast Reactor Power Reduction" using flow and rods.
- D. Fuel cladding damage has occurred; lower power in accordance with GP-9-3, "Fast Reactor Power Reduction" using rods ONLY.

Answer: A

Answer Explanation

EXAMINATION ANSWER KEY

2019 NRC SRO Exam Rev1

Choice	Basis or Justification
Correct	<p>A The injection of a resin into the reactor will cause a rise in N-16 and N-13 activity in the main steam lines. During operation, the dissolved O₂ in the reactor reacts with the N-16 and N-13 to form nitrates (NO₃). NO₃ is soluble in water and does not readily carry over with the steam. A change in pH causes the N-16 and N-13 to combine with the free hydrogen to produce ammonia (NH₃) and nitrous oxide (N₂O). Ammonia and nitrous oxide are more volatile; therefore more N-16 and N-13 carries over with the steam. The rise in N-16 only indicates on the main steam line radiation monitors because of the short half life of the N-16. N-13 has a slightly longer half life and will cause a small rise on the SJAE radiation monitor. ON-103, "Main Steam Line High Radiation" directs performing GP-9. ON-103 does not direct only inserting control rods.</p>
Distractors:	<p>B The injection of a resin into the reactor will cause a rise in N-16 and N-13 activity in the main steam lines. During operation, the dissolved O₂ in the reactor reacts with the N-16 and N-13 to form nitrates (NO₃). NO₃ is soluble in water and does not readily carry over with the steam. A change in pH causes the N-16 and N-13 to combine with the free hydrogen to produce ammonia (NH₃) and nitrous oxide (N₂O). Ammonia and nitrous oxide are more volatile; therefore more N-16 and N-13 carries over with the steam. The rise in N-16 only indicates on the main steam line radiation monitors because of the short half life of the N-16. N-13 has a slightly longer half life and will cause a small rise on the SJAE radiation monitor. ON-103, "Main Steam Line High Radiation" directs performing GP-9. ON-103 does not direct only inserting control rods. Plausible as there are certain times when performing GP-9 that you would lower power with Rods only.</p>
	<p>C The Steam Jet Air Ejector (SJAE) Discharge radiation monitor (RR-3-17-152) is slightly elevated because of the effects of N-13 which has a half life long enough to be indicated on the SJAE radiation monitor. Failed fuel cladding causes the release of fission product gases (Xe, Kr, I) into the reactor cooling. Fuel leaks do not cause Main Steam Line radiation levels to rise. The 1/2 life of Xe and Kr are long enough to indicate on the SJAE discharge radiation monitors. ON-103, "Main Steam Line High Radiation" directs performing GP-9. ON-103 does not direct only inserting control rods.</p>
	<p>D ON-103, "Main Steam Line High Radiation" directs performing GP-9. ON-103 does not direct only inserting control rods. The GP-9 power reduction <u>would</u> include use of inserting control rods once the core flow limit is reached. Plausible as there are certain times when performing GP-9 that you would lower power with Rods only.</p>

EXAMINATION ANSWER KEY

2019 NRC SRO Exam Rev1

Question 21 Info																															
Question Type:	Multiple Choice																														
Status:	Active																														
Always select on test?	No																														
Authorized for practice?	No																														
Points:	1.00																														
Time to Complete:	0																														
Difficulty:	1.00																														
System ID:	2078934																														
User-Defined ID:	B NRC 2019																														
Cross Reference Number:	2.3.15																														
Topic:	ILT-5063-11-001 SRO B NRC. Given a set of conditions evaluate plant performance and make operati																														
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REQUIRED MATERIALS:	None																														
Notes and Comments:	Modified from question 1117626																														

EXAMINATION ANSWER KEY

2019 NRC SRO Exam Rev1

22

Points: 1.00

Given the following:

- A Site Area Emergency has been declared at Peach Bottom
- The Technical Support Center (TSC) has NOT been activated
- The Emergency Operations Facility (EOF) is activated with command and control functions transferred accordingly
- Workers will be entering an unknown radiological atmosphere that is suspected to have a high iodine concentration

According to EP-AA-113 "Personnel Protective Actions", who must authorize the issuance of Potassium Iodine (KI) for onsite personnel?

- A. Shift Emergency Director in the Control Room
- B. Radiation Protection Group Lead in the OSC
- C. Radiation Protection Manager in the EOF
- D. Corporate Emergency Director in the EOF

Answer: A

Answer Explanation		
Choice		Basis or Justification
Correct:	A	The responsibility of authorizing Potassium Iodine (KI) lies within the Emergency Directors responsibilities. This duty can be transferred to the TSC if the TSC has Command and Control. Since Command and Control has not been transferred to the TSC the responsibility remains with the SED in the control room. The responsibility cannot be transferred to the EOF.
Distracters:	B	This is plausible as the Radiation Protection Manager fills out the forms and is consulted on issuing Potassium Iodine (KI). However, the ultimate responsibility of authorizing the distribution of KI is with the Emergency Director. The position of Radiation Protection Group Lead is the equivalent to the RPM in the TSC therefore it would be plausible to believe that the duties of the RPM would fall to the Radiation Protection Group Lead if the TSC did not have command and control.
	C	This is plausible as the Radiation Protection Manager fills out the forms and is consulted on issuing Potassium Iodine (KI). However, the ultimate responsibility of authorizing the distribution of KI is with the Emergency Director. The position of Radiation Protection Manager in the EOF is equivalent to the RPM in the TSC therefore it would be plausible to believe that the duties of the RPM would fall to the Radiation Protection Manager in the EOF if the TSC did not have command and control.
	D	Plausible as the responsibility of authorizing Potassium Iodine (KI) lies within the Emergency Directors responsibilities. This duty can be transferred to the TSC but cannot be transferred to the EOF. The Emergency Directors responsibilities that are transferred to the EOF are PARS and Notifications.

EXAMINATION ANSWER KEY

2019 NRC SRO Exam Rev1

Question 22 Info																																	
Question Type:	Multiple Choice																																
Status:	Active																																
Always select on test?	No																																
Authorized for practice?	No																																
Points:	1.00																																
Time to Complete:	0																																
Difficulty:	0.00																																
System ID:	2096902																																
User-Defined ID:	B NRC 2019																																
Cross Reference Number:	2.4.38																																
Topic:	ILT G6-5 002 SRO B NRC																																
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REQUIRED MATERIALS:	NONE																																
Notes and Comments:																																	

EXAMINATION ANSWER KEY

2019 NRC SRO Exam Rev1

23

Points: 1.00

A General Emergency is declared due to a loss of the Reactor Coolant System and Containment barriers and a potential loss of the Fuel Cladding Barrier (FG1).

- Wind direction is from 100 degrees
- The TSC is staffed and command and control has been transferred

Based on the above conditions the Emergency director shall recommend Evacuate 2 Mile Radius

AND

- _____.
- A. Evacuate 2 - 10 miles in sectors LMNPQ
 - B. Evacuate 2 - 5 miles in sectors LMNPQ
 - C. Evacuate 2 - 10 miles in sectors CDEFG
 - D. Evacuate 2 - 5 miles in sectors CDEFG

Answer: B

Answer Explanation		
Choice		Basis or Justification
Correct:	B	Using the PAR flowchart in EP-AA-111-F-08, we are led to Evacuate 2 - 5 miles. This is because the call is made by the TSC and there is no venting. The wind direction is from 100 degrees and using Table 1 sectors LMNPQ should be evacuated.
Distracters:	A	Plausible if EP-AA-111-F-08 is misapplied and it is believed the Rapidly Progressing Severe Accident threshold has been met. Containment failure is part of the criteria for determining if a Rapidly Progressing Severe Accident is in progress. This leads the flow chart to evacuate 2 - 10 miles. The downwind sectors are correct.
	C	Plausible if EP-AA-111-F-08 is misapplied and it is believed the Rapidly Progressing Severe Accident threshold has been met. Containment failure is part of the criteria for determining if a Rapidly Progressing Severe Accident is in progress. This leads the flow chart to evacuate 2 - 10 miles. Plausible if table is misapplied as the sectors listed are 180 degrees opposite and considered upwind. Transposing the wind direction 180 degrees is a common mistake made when determining PARs.
	D	Using the PAR flowchart in EP-AA-111-F-08, we are led to Evacuate 2 - 5 miles. This is because the call is made by the TSC and there is no venting. Plausible if table is misapplied as the sectors listed are 180 degrees opposite and considered upwind. Transposing the wind direction 180 degrees is a common mistake made when determining PARs.

EXAMINATION ANSWER KEY

2019 NRC SRO Exam Rev1

Question 23 Info																																							
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Always select on test?	No																																						
Authorized for practice?	No																																						
Points:	1.00																																						
Time to Complete:	0																																						
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System ID:	2096904																																						
User-Defined ID:	B NRC 2019																																						
Cross Reference Number:	2.4.44																																						
Topic:	ILT G5-6-004 SRO B NRC - PAR recommendation																																						
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Notes and Comments:																																							

EXAMINATION ANSWER KEY

2019 NRC SRO Exam Rev1

24

Points: 1.00

Unit 2 is shutdown

- Maintenance has an activity that will raise Secondary Containment leakage to 10,000 cfm

Choose the correct statement below:

This activity is ____ (1) ____ the GP-16 "Breaching and Establishing Secondary Containment" administrative limit.

AND

The activity can continue with the approval of the ____ (2) ____.

- A. (1) below
(2) Operations Director
- B. (1) above
(2) Operations Director
- C. (1) below
(2) Control Room Supervisor
- D. (1) above
(2) Control Room Supervisor

Answer: B

Answer Explanation		
Choice		Basis or Justification
Correct:	B	In accordance with GP-16 the administrative limit for Secondary Containment leakage is 9000 cfm. If it is necessary for the administrative limit to be exceeded, attachment 2 must be performed and approved by either the Operation Director or Shift Operation Superintendent prior to performing any job exceeding the 9000 cfm limit.
Distractors	A	Plausible as the Tech Spec in-leakage limit for Secondary Containment is 10500 cfm. The Operations Director is the correct person to approve an activity that raises the Secondary Containment leakage to 10,000 cfm.
	C	Plausible as the Tech Spec in-leakage limit for Secondary Containment is 10500 cfm. Plausible as the Control Room Supervisor approves and performs GP-16.
	D	In accordance with GP-16 the administrative limit for Secondary Containment leakage is 9000 cfm. Plausible as the Control Room Supervisor approves and performs GP-16.

EXAMINATION ANSWER KEY

2019 NRC SRO Exam Rev1

Question 24 Info			
Question Type:	Multiple Choice		
Status:	Active		
Always select on test?	No		
Authorized for practice?	No		
Points:	1.00		
Time to Complete:	3		
Difficulty:	2.00		
System ID:	2096143		
User-Defined ID:	B NRC 2019		
Cross Reference Number:	2.2.18		
Topic:	ILT-1530-3-006 SRO GP-16 admin limit and approval		
Num Field 1:			
Num Field 2:			
Text Field:			
Comments:	Psychometrics		
	Level of Knowledge	Difficulty	Time Allowance (minutes)
	Memory		
			SRO
			10CRF55.43(b) 5
	Source Documentation		
	Source:	<input checked="" type="checkbox"/> New Exam item <input type="checkbox"/> Modified Bank <input type="checkbox"/> Previous NRC Exam <input type="checkbox"/> Other Exam Bank <input type="checkbox"/> ILT Exam Bank	
	Reference(s):	GP-16	
	Learning Objective:	PLOT-1530-3	
	K/A System:		Importance; RO / SRO 3.9
	K/A Statement:	2.2.18 - knowledge of the process for managing maintenance activities during shutdown operations, such as risk assessments, work prioritization etc.	
	REQUIRED MATERIALS:	None	
	Notes and Comments:		

EXAMINATION ANSWER KEY

2019 NRC SRO Exam Rev1

25

Points: 1.00

- Unit 2 is being shutdown for a refueling outage in accordance with procedure GP-3-2, "Normal Plant Shutdown"
- The initial Drywell entry is being prepared in accordance with procedure RP-PB-461, "Drywell Initial Entry"

To protect personnel making the Drywell entry from unnecessary radiation exposure, procedures GP-3-2 and RP-PB-461 require that Operations personnel apply a(n) _____(1)_____ to the Traversing In-core Probe (TIP) System controls.

RP-PB-461 also requires Drywell entry approval from both a Radiation Protection Supervisor and from _____(2)_____.

- A. (1) Tagout
(2) the Plant Manager
- B. (1) Tagout
(2) Operations Shift Management
- C. (1) ACPS
(2) Operations Shift Management
- D. (1) ACPS
(2) the Plant Manager

Answer: B

Answer Explanation

EXAMINATION ANSWER KEY

2019 NRC SRO Exam Rev1

Choice		Basis or Justification
Correct:	B	<p>Per GP-3-2 (Rev.1, step 6.76) and RP-PB-461, Attachment 1 -Initial Entry Checklist, Operations personnel must apply a clearance to the Traversing In-core Probe (TIP) System controls in order to ensure that TIPS are not run and in their shields to protect personnel from any accidental radiation exposure.</p> <p>RP-PB-461, Attachment 1, also requires Drywell entry approval from both a Radiation Protection Supervisor and from Operations Shift Management.</p>
Distractor s:	A	<p>The management level of approval is incorrect. RP-PB-461, Attachment 1, requires Drywell entry approval from both a Radiation Protection Supervisor and from Operations Shift Management.</p>
	C	<p>Incorrect. An Equipment Status Tag is not an acceptable process for protecting station personnel. Per GP-3-2 (Rev.1, step 6.76) and RP-PB-461, Attachment 1 -Initial Entry Checklist, Operations personnel must apply a clearance to the Traversing In-core Probe (TIP) System controls in order to ensure that TIPS are not run and in their shields to protect personnel from any accidental radiation exposure.</p>
	D	<p>Both parts are incorrect. An Equipment Status Tag is not an acceptable process for protecting station personnel. Per GP-3-2 (Rev.1, step 6.76) and RP-PB-461, Attachment 1 -Initial Entry Checklist, Operations personnel must apply a clearance to the Traversing In-core Probe (TIP) System controls in order to ensure that TIPS are not run and in their shields to protect personnel from any accidental radiation exposure. RP-PB-461, Attachment 1, requires Drywell entry approval from both a Radiation Protection Supervisor and from Operations Shift Management.</p>

EXAMINATION ANSWER KEY

2019 NRC SRO Exam Rev1

Question 25 Info																																							
Question Type:	Multiple Choice																																						
Status:	Active																																						
Always select on test?	No																																						
Authorized for practice?	No																																						
Points:	1.00																																						
Time to Complete:	0																																						
Difficulty:	0.00																																						
System ID:	994327																																						
User-Defined ID:	B NRC 2019																																						
Cross Reference Number:	G2.3.13																																						
Topic:	ILT-1730-2c-001 SRO Drywell Initial Entry																																						
Num Field 1:																																							
Num Field 2:	0.00																																						
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