

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

1

ID: 1118606

Points: 1.00

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

- Feedwater master level control is in AUTOMATIC
- Feedwater mode select is in "3-Element Control" and in AUTOMATIC
- Total steam flow equals total feedwater flow
- RPV level on narrow range LI-2-06-094A is 19 inches
- RPV level on narrow range LI-2-06-094B is 27 inches
- RPV level on narrow range LI-2-06-094C is 25 inches

Based on the above conditions the (1) section of the "3-Element Control" will cause reactor feedpump speed to (2).

- A. (1) L
(2) rise
- B. (1) L
(2) lower
- C. (1) S/F
(2) rise
- D. (1) S/F
(2) lower

Answer: B

Answer Explanation		
Choice		Basis or Justification
Correct:	B	Since steam flow equals feedwater flow, the L (Level) section of the 3-Element Control will respond to the difference in actual RPV level to the setpoint of 23 inches. Feedwater level in AUTOMATIC will control RPV level based on the median level signal of 25 inches. Feedwater control will send a signal for the feed pump speed to lower to drive RPV level down to the setpoint of 23 inches.
Distractors:	A	Since steam flow equals feedwater flow, the L (Level) section of the 3-Element Control will respond to the difference in actual RPV level to the setpoint of 23 inches. Feedwater level in AUTOMATIC will control RPV level based on the median level signal of 25 inches. Feedwater control will send a signal for the feed pump speed to lower to drive RPV level down to the setpoint of 23 inches. Plausible if the candidate does not understand that the feedwater system takes the median RPV level signal to make adjustments to feedpump speed.

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	C	The Steam flow/Feed flow section of the feedwater system will not make the adjustment because steam flow equals feedwater flow. Plausible if the candidate does not understand the relationship between the L and S/F section of the feedwater control system. Feedwater control will send a signal for the feed pump speed to lower to drive RPV level down to the setpoint of 23 inches. Plausible if the candidate does not understand that the feedwater system takes the median RPV level signal to make adjustments to feedpump speed.
	D	The Steam flow/Feed flow section of the feedwater system will not make the adjustment because steam flow equals feedwater flow. Plausible if the candidate does not understand the relationship between the L and S/F section of the feedwater control system.

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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:	1118606																																														
User-Defined ID:																																															
Cross Reference Number:	259002K3.05																																														
Topic:	ILT-5006-5t-002																																														
Num Field 1:	NRC 2015																																														
Num Field 2:																																															
Text Field:																																															
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Notes and Comments:	None																																														

EXAMINATION ANSWER KEY

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2

ID: 1097805

Points: 1.00

A small break LOCA has occurred on Unit 3. The following conditions exist:

- Drywell Pressure is 10 psig and rising
- Drywell Temperature is 250 degrees F and rising
- RPV Level is -165 inches and lowering
- RPV pressure is 750 psig and lowering
- No RHR or Core Spray pumps are running

To complete the logic for an Automatic Depressurization System (ADS) initiation the operator must:

- A. Start the 3A Core Spray pump.
- B. Start the 3C Core Spray pump.
- C. Start the 3A and 3B Core Spray pumps.
- D. Start the 3A and 3C Core Spray pumps

Answer: D

Answer Explanation		
Choice		Basis or Justification
Correct:	D	ADS Logic requires the correct combination of Core Spray pumps to complete the logic for an initiation. (A or B and C or D). Starting the A and C Core Spray pumps completes this logic.
Distracters:	A	Starting only the 3A Core Spray pump does not complete the logic for an initiation of ADS. Plausible if the candidate confuses the ADS initiation logic requirement for Core Spray with RHR which only requires one RHR pump to be operating.
	B	Starting only the 3C Core Spray pump does not complete the logic for an initiation of ADS. Plausible if the candidate confuses the ADS initiation logic requirement for Core Spray with RHR which only requires one RHR pump to be operating.
	C	ADS Logic requires the correct combination of Core Spray pumps to complete the logic for an initiation. (A or B and C or D). Starting the A and B Core Spray pumps does not complete this logic. Plausible if the candidate does not remember the correct combination of pumps required for logic initiation.

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Question 2 Info																																															
Question Type:	Multiple Choice																																														
Status:	Active																																														
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Authorized for practice?	No																																														
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EXAMINATION ANSWER KEY

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3

ID: 994361

Points: 1.00

Unit 2 is in MODE 4.

- The "B" Loop of RHR is lined up to cool the fuel pool per AO 10.3-2, "RHR System to Fuel Pool Cross-Connect Operation" using the 2D RHR pump
- The "A" Loop of RHR is lined up in shutdown cooling with the 2A RHR pump
- Annunciator 005-B1, E-42 BUS DIFFERENTIAL OR OVERCURRENT RELAYS, is flashing.

The E4 Diesel Generator auto starts and:

- A. energizes the E42 Bus. Shutdown Cooling remains in service.
- B. energizes the E42 Bus. Fuel Pool Cooling using 'B' RHR Loop remains in service.
- C. does NOT energize the E42 Bus. Shutdown Cooling is lost.
- D. does NOT energize the E42 Bus. Fuel Pool Cooling using the 'B' RHR Loop is lost.

Answer: D

Answer Explanation		
Choice		Basis or Justification
Correct:	D	E4 Diesel will auto start on low E-42 bus voltage, but does not load onto the E-42 bus due to the bus fault condition. With E-42 bus de-energized the 2D RHR pump has no power and therefore RHR system assist with fuel pool cooling is lost.
Distractors:	A	E4 Diesel output breaker is locked out from closing due to the E-42 bus fault. Plausible if the candidate does not understand that the Bus Differential Overcurrent is a bus lockout.
	B	E4 Diesel is locked out, and the 2D RHR Pump will trip of loss of E-42 bus power. Plausible if the candidate does not understand that the Bus Differential Overcurrent is a bus lockout. Plausible if the candidate does not understand that E-42 bus is the power supply for the 2D RHR pump.
	C	2A RHR Pump is powered from the E12 Bus. Shutdown cooling will <u>not</u> be lost. Plausible if the candidate does not understand the power supplies to the RHR pumps.

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EXAMINATION ANSWER KEY

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4

ID: 1119614

Points: 1.00

The E-42 bus becomes deenergized.

This results in power being lost to which one of the following cooling water valves?

- A. MO-2-10-89A "A HPSW HX Outlet".
- B. MO-2-10-89B "B HPSW HX Outlet".
- C. MO-2-10-89C "C HPSW HX Outlet".
- D. MO-2-10-89D "D HPSW HX Outlet".

Answer: D

Answer Explanation		
Choice		Basis or Justification
Correct:	D	Loss of power to the E-42 bus will cause a loss of power to MO-2-10-89D "D HPSW HX Outlet". The valve is powered directly from Motor Control Center E424-W-A.
Distractors:	A	Plausible if the candidate does not recall the power supply to the HPSW pump discharge valve.
	B	Plausible if the candidate does not recall the power supply to the HPSW pump discharge valve.
	C	Plausible if the candidate does not recall the power supply to the HPSW pump discharge valve.

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

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																																														
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Topic:	ILT-5032-2b-003																																														
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EXAMINATION ANSWER KEY

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5

ID: 1097845

Points: 1.00

Unit 2 is experiencing an ATWS. The following conditions exist:

- 2A Standby Liquid Control (SLC) pump is running
- Both SLC continuity lights are lit
- Reactor pressure is 1050 psig
- 2A SLC pump discharge pressure is 1150 psig
- 2B RWCU pump is in-service vessel to vessel

Based on the above conditions, SLC is _____

- A. injecting. Reactor power will drop below 3% in less than 5 minutes.
- B. injecting. Reactor Water Cleanup must be isolated.
- C. NOT injecting. The 2B SLC pump must be started.
- D. NOT injecting because the Squib valves did not fire.

Answer: B

Answer Explanation		
Choice		Basis or Justification
Correct:	B	The 2A SLC pump is injecting. SLC pump discharge pressure is slightly higher than Reactor pressure. The Squib continuity lights do not extinguish when the pump switch is taken to START. RWCU did not isolate as required when the SLC pump switch was taken to START due to a problem with the SLC START switch. Because of this SLC START switch malfunction the RWCU system must be manually isolated to shutdown the reactor with SLC.
Distractors:	A	SLC is injecting, RWCU did not isolate therefore reactor power will not go from 100% to less than 3% power within 8 minutes as verified on the Peach Bottom simulator. Plausible if the candidate does not recognize that RWCU is in-service and should have isolated automatically when the SLC control switch was taken to Start.
	C	SLC is injecting there is not a reason to start the 2B SLC pump. Plausible if the candidate does not understand the indication of an injecting positive displacement pump.
	D	SLC is injecting the Squib continuity lights do not extinguish when the pump control switch is taken to Start. Plausible if the candidate does not understand the indication of an injecting positive displacement pump and the operation of the Squib valves.

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Question 5 Info																																															
Question Type:	Multiple Choice																																														
Status:	Active																																														
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Level of Knowledge	Difficulty	Time Allowance (minutes)	RO																																												
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REQUIRED MATERIALS:	None																																														
Notes and Comments:	None																																														

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

6

ID: 1097864

Points: 1.00

Unit 2 HPCI is injecting into the RPV following a Group I isolation.

The following conditions exist:

- HPCI steam piping area temperature is 210 degrees F and rising
- RPV level is -100 inches and rising slowly
- Drywell pressure is 1 psig and steady
- HPCI pump discharge flow on FI-2-23-108 is 5000 gpm and steady

Based on the above conditions, the HPCI PCIS Group IV isolation _____.

- A. will occur when HPCI area temperature reaches the 250 degrees F.
- B. will occur when RPV level rises above -48 inches.
- C. has failed. Close valve MO-2-23-15 "HPCI Steam Isolation" ONLY.
- D. has failed. Close valve MO-2-23-15 "HPCI Steam Isolation" and remove the valve electrical feed.

Answer: D

Answer Explanation		
Choice		Basis or Justification
Correct:	D	HPCI should have isolated. The area temperature is above the isolation setpoint of 200 degrees F.
Distractors:	A	The isolation setpoint is 200 degrees F. Plausible if the candidate confuses the HPCI isolation setpoint with the Reactor Building Main Steam Line isolation setpoint.
	B	The initiation signal does not affect the isolation setpoint. Plausible if the candidate does not understand the relationship of the initiation logic and the isolation logic.
	C	MO-15 will not stay closed with the initiation signal present (\leq -48 inches RPV level). Plausible if the candidate does not understand how the initiation signal affects the MO-15 valve logic.

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

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:	1097864																																														
User-Defined ID:																																															
Cross Reference Number:	223002 K3.01																																														
Topic:	ILT-5007G-5I-001																																														
Num Field 1:	NRC 2015																																														
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REQUIRED MATERIALS:	None																																														
Notes and Comments:	None																																														

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

7

ID: 1097970

Points: 1.00

Unit 2 is in an outage.

- The E-22 bus is deenergized with the E-222 breaker open and the E-322 breaker open.
- The E-222 breaker and the E-322 breaker control switches are in "Normal After Trip".
- A Loss of Off-Site power occurs.

Based on the above conditions, the E-2 Diesel Generator will:

- A. NOT start.
- B. start and energize ONLY the E-22 bus.
- C. start and energize ONLY the E-23 bus.
- D. start and energize BOTH the E-22 bus and the E-23 bus.

Answer: C

Answer Explanation		
Choice		Basis or Justification
Correct:	C	The E-22 bus is not setup for fast transfer because both supply breakers are in "normal after trip". When the loss of off-site power occurs the D/G will start and only load the E-23 bus.
Distractors:	A	The D/G will receive a start signal from the undervoltage on the E-23 bus.
	B	The E-22 bus can not load the bus is not setup for fast transfer.
	D	The E-22 bus can not load the bus is not setup for fast transfer.

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

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:	0.00																																														
System ID:	1097970																																														
User-Defined ID:																																															
Cross Reference Number:	264000K4.08																																														
Topic:	ILT-5052-3h-001																																														
Num Field 1:	NRC 2015																																														
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REQUIRED MATERIALS:	None																																														
Notes and Comments:	None																																														

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

8

ID: 993543

Points: 1.00

Consider the following accident scenario:

- T=0 sec Small line break LOCA occurs.
- T=10 sec RPV level is 1 inch, Reactor Scram occurs, and all Control Rods insert to full-in.
- T=25 sec RPV level is -48 inches and dropping, HPCI and RCIC fail to start.
- T=130 sec RPV level is -160 inches; MSIVs are shut, Low Pressure ECCS Pumps are running on minimum flow and all four Emergency Diesel Generators are running.
- T=155 sec Drywell pressure is 2 psig and rising.
- T=200 sec RCIC is manually started and is injecting into the RPV.
- T=210 sec RPV level is steady at -130 inches.

Based on the above conditions, assuming no further operator action and no additional equipment malfunctions, the ADS system will _____.

- A. NOT initiate.
- B. initiate 105 seconds after T=155 seconds.
- C. initiate 105 seconds after T=130 seconds.
- D. initiate 9 minutes and 105 seconds after T=155 seconds.

Answer: A

Answer Explanation		
Choice		Basis or Justification
Correct:	A	RPV level is recovered above -160 inches before the 105 second timer has timed out. This resets the ADS timer and a blowdown does not occur.
Distractors:	B	Plausible if the candidate does not understand that if RPV level is recovered above -160 inches the logic resets.
	C	Plausible if the candidate does not understand that if RPV level is recovered above -160 inches the logic resets. Plausible if the candidate does not remember that the logic needs either the 2 psig drywell signal or be below -160 inches for 9 minutes.
	D	Plausible if the candidate does not understand that if RPV level is recovered above -160 inches the logic resets.

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

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:	993543																																														
User-Defined ID:																																															
Cross Reference Number:	218000K4.01																																														
Topic:	ILT-5001G-3a-001																																														
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REQUIRED MATERIALS:	None																																														
Notes and Comments:	None																																														

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

9

ID: 1098003

Points: 1.00

Unit 3 is at power following a maintenance outage.

The following conditions exist:

- Reactor power is 90% and steady
- Total drive flow is 70% and steady

Bases on the above conditions, a Simulated Thermal Power (STP) flow biased rod block will first occur at approximately ____ (1) ____, and an STP flow biased scram will first occur at approximately ____ (2) ____.

- A. (1) 90.6%
(2) 102.6%
- B. (1) 100.0%
(2) 109.2%
- C. (1) 108.0%
(2) 117.6%
- D. (1) 112.5%
(2) 121.7%

Answer: B

Answer Explanation		
Choice		Basis or Justification
Correct:	B	$.65(70)+54.5 = 100.0\%$ is the APRM rod block setpoint based on TRM values. $.65(70)+63.7 = 109.2\%$ for the APRM scram setpoint based on Tech Spec values.
Distractors:	A	These values were derived using an old calculation $(.58w+62)$ for the scram setpoint and $(.58w+50)$ for the rod block setpoint. Plausible if the candidate does not remember the correct formula for the setpoints.
	C	These are the clamped values for the Rod Block and the Scram. Plausible if the candidate does not recall the calculation and only the clamp values.
	D	These values were derived substituting 90% for the flow value. Plausible if the candidate is unsure of which value gets substituted for "W" in the calculation and uses the power value instead of flow.

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

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:	1098003																																														
User-Defined ID:																																															
Cross Reference Number:	215005K5.05																																														
Topic:	ILT-5060-4e-001																																														
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REQUIRED MATERIALS:	None																																														
Notes and Comments:	None																																														

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

10

ID: 1098004

Points: 1.00

To parallel an Emergency Diesel Generator with a startup source that is supplying a 4kV bus, the Diesel Generator speed control must be in ____ (1) ____ and the Diesel must be running slow in the ____ (2) ____.

- A. (1) droop
(2) fast direction
- B. (1) droop
(2) slow direction
- C. (1) isochronous
(2) fast direction
- D. (1) isochronous
(2) slow direction

Answer: A

Answer Explanation		
Choice		Basis or Justification
Correct:	A	When paralleling an Emergency Diesel Generator (EDG) with a startup source the EDG speed control must be in droop to allow for load sharing with the startup source. If the EDG speed control was in isochronous the EDG would try and pickup the load of the startup source (essentially the electric grid) and the EDG would run until it trips on an overload condition. The EDG speed must be slow in the fast direction in order to ensure that the EDG picks up the bus load and does not trip on reverse power.
Distractors:	B	Incorrect. Correct speed control setting, however the running direction is not correct. It must be slow in the FAST direction. Plausible if the candidate confuses EDG required speed direction if the EDG is already carrying the bus load and then wants to parallel with the off-site source.
	C	Incorrect. The speed control setting of isochronous is not correct. Plausible if the candidate confuses EDG required speed control for carrying the bus alone (no startup source parrallel operations). The speed direction is correct.
	D	Incorrect. The speed control setting of isochronous is not correct. Plausible if the candidate confuses EDG required speed control for carrying the bus alone (no startup source parrallel operations). Speed direction is only correct if the EDG is already carrying the bus load and then wants to parallel with the off-site source. Not the case here.

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

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:	1098004																																														
User-Defined ID:																																															
Cross Reference Number:	262001K5.01																																														
Topic:	ILT-5054-4a-001																																														
Num Field 1:	NRC 2015																																														
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Reference(s):	SO 52A.1.B Diesel Generator Operations																																														
Learning Objective:	PLOT-5054-4a																																														
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REQUIRED MATERIALS:	None																																														
Notes and Comments:	None																																														

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

11

ID: 993231

Points: 1.00

Which one of the following identifies the available indications of reactor power in the Main Control Room during a loss of RPS "A" and "B" power on Unit 2?

	<u>Indication</u>	<u>Location</u>
A.	APRM only	20C037 only
B.	WRNM only	20C036 only
C.	APRM only	20C005 and 20C037
D.	WRNM only	20C005 and 20C036

Answer: D

Answer Explanation		
Choice		Basis or Justification
Correct:	D	The WRNM system does not receive any power from RPS, therefore a loss of RPS will not affect the WRNM indications or functions. WRNM displays on both the 20C005 and the 20C036 panels will remain available. A and B RPS busses supply all inputs to the Quad Low Voltage Power Supplies for all 4 of the APRMs. If both channels of RPS were lost, all four 2-out-of-4 logic modules and all four APRM channels would lose power.
Distractors:	A	Incorrect. A and B RPS busses supply all inputs to the Quad Low Voltage Power Supplies for all 4 of the APRMs. If both channels of RPS were lost, all four 2-out-of-4 logic modules and all four APRM channels would lose power. Also, the location is not correct. Panel 20C036 is where the WRNM moduled are located, not the APRM module.
	B	Incorrect. WRNM displays on both the 20C005 and the 20C036 panels will remain available.
	C	Incorrect. A and B RPS busses supply all inputs to the Quad Low Voltage Power Supplies for all 4 of the APRMs. If both channels of RPS were lost, all four 2-out-of-4 logic modules and all four APRM channels would lose power.

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

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:	0.00																																														
System ID:	993231																																														
User-Defined ID:	ILT-5060C-3B-002																																														
Cross Reference Number:	215003 K6.01																																														
Topic:	ILT-5060C-6b-002 Loss of Power to ODAs/Recorders																																														
Num Field 1:	2015 NRC																																														
Num Field 2:	N/A																																														
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Level of Knowledge	Difficulty	Time Allowance (minutes)	RO																																												
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REQUIRED MATERIALS:	None																																														
Notes and Comments:	None																																														

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

12

ID: 994536

Points: 1.00

- A plant transient has resulted in a loss of power to 20Y034 and a subsequent failure of Unit 2 RPS to initiate a reactor scram.
- The Reactor Operator has placed the Standby Liquid Control (SLC) Control Switch to the 'Start System A' position.
- Print M-1-S-46 sheets 1 and 2 are provided separately for reference.

Based on the above conditions, which of the following describes the 2A SLC Pump response, including indications? The 2A SLC Pump _____.

- A. starts,
both squib valves fire,
running indication red light is lit,
both squib valve continuity lights are lit.
- B. starts,
both squib valves fire,
running indication red light is NOT lit,
both squib valve continuity lights are NOT lit.
- C. does NOT start,
both squib valves do NOT fire,
not running indication green light is lit,
both squib valve continuity lights are lit.
- D. does NOT start,
both squib valves do NOT fire,
the not running indication green light is NOT lit,
both squib valve continuity lights are NOT lit.

Answer: B

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

Answer Explanation		
Choice		Basis or Justification
Correct:	B	Standby Liquid Control (SLC) Pump, squib continuity and discharge manual valve position indication (HV-18) light indications are powered not from the pump breaker, but from 2(3)0Y34 Panel. Squib valve power comes from the SLC pump motor control center which is not affected by a loss of 20Y34.
Distractors:	A	Incorrect. A loss of 20Y34 causes loss of power to lights on C005A. There would be no red running light indication nor any squib continuity lights lit under a loss of 20Y34.
	C	Incorrect. A loss of 20Y34 does not affect ability to start SLC. Pump power is from emergency related bus E-124-R-C. However, all related panel indicating lights are off.
	D	Incorrect. A loss of 20Y34 does not affect ability to start SLC. Pump power is from emergency related bus E-124-R-C

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

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:	994536																																														
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Cross Reference Number:	211000K6.03																																														
Topic:	ILT-5011-7c-001																																														
Num Field 1:	NRC 2015																																														
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Psychometrics																																															
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Reference(s):	M-1-S-46																																														
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K/A System:	211000 Standby Liquid Control System	Importance RO / SRO 3.2/ 3.3																																													
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Notes and Comments:	None																																														

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

13

ID: 1098022

Points: 1.00

A LOCA has occurred on Unit 2. The following conditions exist:

- RPV level is -200 inches and steady
- Drywell pressure is 7 psig and rising slowly
- MO-2-14-12B, "Core Spray Injection Valve" is open
- The "B" and "D" Core Spray pumps are running
- Core Spray flow as indicated on FI-2-14-50B is 7000 gpm

Based on the above conditions, reactor pressure is ____ (1) ____, there ____ (2) ____ Adequate Core Cooling.

- A. (1) 300 psig
(2) is
- B. (1) 300 psig
(2) is not
- C. (1) 400 psig
(2) is
- D. (1) 400 psig
(2) is not

Answer: A

Answer Explanation		
Choice		Basis or Justification
Correct:	A	With injection RPV pressure must be less than the Core Spray discharge pressure of 330 psig. Core Spray flow is above the value for spray cooling with RPV level above -226 inches.
Distractors:	B	Plausible if the candidate does not recognize that ACC is established even with low level (above -226 inches) with adequate Steam Cooling.
	C	Plausible if the candidate does not understand the Core Spray discharge pressure with respect to Reactor pressure.
	D	Plausible if the candidate does not recognize that ACC is established even with low level (above -226 inches) with adequate Steam cooling. Plausible if the candidate does not understand the Core Spray discharge pressure with respect to Reactor pressure.

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

Question 13 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:	1098022																																														
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Cross Reference Number:	209001A1.04																																														
Topic:	ILT-5014-9k.4-001																																														
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REQUIRED MATERIALS:	None																																														
Notes and Comments:	None																																														

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

14

ID: 1098332

Points: 1.00

Unit 3 was operating at 100% power with Torus temperature at 89°F

A small break LOCA occurred and ADS has initiated.

Following the ADS blowdown the following conditions exist:

- RPV level is 10 inches and rising
- RPV pressure is 100 psig and lowering
- All RHR and Core Spray pumps are injecting
- Drywell pressure is 8 psig and lowering
- Torus level is fluctuating between 14.65 feet and 14.85 feet

Based on the above conditions, Torus temperature will be (1) the T-102 Torus temperature entry condition.

Long-term decay heat removal is ensured using a minimum of (2) RHR and HPSW pump(s).

- A. (1) less than
(2) one
- B. (1) less than
(2) two
- C. (1) greater than
(2) one
- D. (1) greater than
(2) two

Answer: C

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

Answer Explanation		
Choice		Basis or Justification
Correct:	C	An ADS blowdown will cause Torus temperature to rise above 95 degrees F which is the T-102 entry condition for high Torus temperature. One RHR pump with its associated HPSW pump is sufficient to handle decay heat load by design.
Distractors:	A	Incorrect. An ADS blowdown will cause Torus temperature to rise above 95 degrees F which is the T-102 entry condition for high Torus temperature. Plausible if the candidate does not recall that an ADS blowdown includes 5 open SRVs and a significant amount of energy to the Torus.
	B	Incorrect. An ADS blowdown will cause Torus temperature to rise above 95 degrees F which is the T-102 entry condition for high Torus temperature. One RHR pump with its associated HPSW pump is sufficient to handle decay heat load by design. Plausible if the candidate does not remember these design conditions.
	D	Incorrect. One RHR pump with its associated HPSW pump is sufficient to handle decay heat load by design.

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

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:	1098332																																														
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Cross Reference Number:	218000A1.06																																														
Topic:	ILT-5001G-9k.6-001																																														
Num Field 1:	2015 NRC																																														
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Psychometrics																																															
Level of Knowledge	Difficulty	Time Allowance (minutes)	RO																																												
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K/A System:	218000 Automatic Depressurization System		Importance: RO / SRO 4.1 / 4.3																																												
K/A Statement:	A1.06 Ability to predict and/or monitor changes in parameter associated with operating the AUTOMATIC DEPRESSURIZATION SYSTEM controls including: Suppression pool temperature																																														
REQUIRED MATERIALS:	None																																														
Notes and Comments:	None																																														

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

15

ID: 1098361

Points: 1.00

- A Station Blackout has occurred.
- Unit 2 HPCI is injecting into the RPV to control RPV level.
- A significant steam leak occurs just downstream of MO-2-23-16 "HPCI Steam Supply Isolation Valve" causing a HPCI isolation signal.

Based on the above conditions, choose the correct statement below regarding the HPCI system response and additional mitigating actions.

The HPCI steam leak will _____.

- A. automatically isolate. Bypass the high temperature isolation using SE-11 ATTACHMENT X, "Defeat of the HPCI and RCIC Steam Line High Temperature Isolation".
- B. automatically isolate. Start RCIC using RRC 13.1-2, "RCIC System Operation During a Plant Event" to control RPV water level.
- C. NOT automatically isolate. Isolate HPCI using GP-8.F "PCIS Isolation - Groups IV and IV-B"
- D. NOT automatically isolate. Trip HPCI using RRC 23.1-2, "HPCI System Operation During a Plant Event" to minimize the steam leak into the HPCI room.

Answer: B

Answer Explanation		
Choice		Basis or Justification
Correct:	B	Even with a station blackout (SBO) HPCI will isolate MO-2-23-16 will close to isolate the leak since the logic and valve power is DC. When HPCI is out of Service RCIC will be the only system available to inject during a SBO event.
Distractors:	A	It is not appropriate to bypass the High temperature isolation with a steam leak. SE-11 Att X is only used to bypass the high temperature condition due to a lack of ventilation flow. Plausible if the candidate does not recall the purpose of SE-11 Att X.
	C	HPCI will isolate. GP-8 F is not required to perform the isolation because the isolation would have occurred. Plausible is the candidate does not recall that MO-2-23-16 is D.C. powered.
	D	HPCI will isolate. Tripping HPCI will not reduce the steam flow to the HPCI room. Plausible is the candidate does not recall that MO-2-23-16 is D.C. powered. Plausible if the candidate does not understand that the turbine trip will not minimize steam flow to the HPCI room.

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

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:	1098361																																														
User-Defined ID:																																															
Cross Reference Number:	206000 A2.04																																														
Topic:	ILT-5023-7c-002																																														
Num Field 1:	2015 NRC																																														
Num Field 2:																																															
Text Field:																																															
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Psychometrics																																															
Level of Knowledge	Difficulty	Time Allowance (minutes)	RO																																												
HIGH			10CRF55.41(b)(7)																																												
Source Documentation																																															
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Reference(s):	PLOT 5023																																														
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K/A System:	206000 High Pressure Coolant Injection System		Importance: RO / SRO 2.7/ 3.0																																												
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REQUIRED MATERIALS:	None																																														
Notes and Comments:	None																																														

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

16

ID: 1098490

Points: 1.00

RCIC is aligned for injection following a Group I isolation. The following conditions exist:

- HPCI is unavailable
- RPV level is -100 inches and steady
- RPV pressure is 1050 psig and steady
- RCIC system flow is 60 gpm
- RCIC turbine speed is 2600 rpm
- The RCIC flow controller has failed to operate in automatic

Based on the above conditions, choose the correct answer with respect to RCIC system operation and required operator action.

The RCIC system will ____ (1) ____ and the required operator action is to ____ (2) ____.

- A. (1) cause damage to the turbine exhaust check valve due to low RCIC RPMs
(2) secure RCIC using SO 13.1-2, Section E, "RCIC System Shutdown".
- B. (1) cause damage to the turbine exhaust check valve due to low RCIC RPMs
(2) place the RCIC flow controller in manual and raise flow to 600 gpm using SO 13.1.C-2, "RCIC System Automatic Initiation Response".
- C. (1) pump the Condensate Storage Tank to the Torus
(2) secure RCIC using RRC 13.1-2, Section E, "RCIC System Shutdown".
- D. (1) pump the Condensate Storage Tank to the Torus
(2) place the RCIC flow controller in manual and raise flow to 600 gpm using SO 13.1.C-2, "RCIC System Automatic Initiation Response".

Answer: D

Answer Explanation		
Choice		Basis or Justification
Correct:	D	With the low system flow condition of only 60 gpm the RCIC system will pump the CST through the open minflow valve to the Torus. RPV level is below the -48 inch automatic initiation setpoint SO 13.1.C directs that RCIC not be secured until RPV level is returned to the normal band.
Distractors:	A	With high Reactor pressure RCIC speed will not be low even though system flow is low. RCIC must remain in-service with low RPV level. Plausible if the candidate does not understand the relationship between RPV pressure and system speed. Plausible if the candidate does not understand that securing RCIC would violate SO 13.1.C.

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

B	With high Reactor pressure RCIC speed will not be low even though system flow is low. Plausible if the candidate does not understand the relationship between RPV pressure and system speed.
C	RCIC must remain in-service with low RPV level. Plausible if the candidate does not understand that securing RCIC would violate SO 13.1.C.

Question 16 Info																																															
Question Type:	Multiple Choice																																														
Status:	Active																																														
Always select on test?	No																																														
Authorized for practice?	No																																														
Points:	1.00																																														
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Topic:	ILT-5013-7e-001																																														
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Text Field:																																															
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Psychometrics																																															
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REQUIRED MATERIALS:	None																																														
Notes and Comments:	None																																														

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

17

ID: 993215

Points: 1.00

- A transient and plant trip from 100% power occurred on Unit 2.
- Reactor pressure was observed to reach 1150 psig.

Based on the above conditions, _____ should have opened to limit RPV pressure.

- A. Four (4) SRVs
- B. Eight (8) SRVs
- C. Eleven (11) SRVs
- D. All SRVs and the Safety Valves

Answer: B

Answer Explanation		
Choice		Basis or Justification
Correct:	B	As required by Technical Specifications, SRV lift setpoints are: 4 SRVs at 1135 psig, 4 SRVs at 1145psig, 3 SRVs at 1155 psig, and 3 Safety Valves at 1260 psig. With a pressure of 1150 eight SRVs will have opened.
Distractors:	A	Plausible if the candidate does not recall the SRV lift points.
	C	Plausible if the candidate does not recall the SRV lift points.
	D	Plausible if the candidate does not recall the SRV and SV lift points.

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

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:	0.00																																														
System ID:	993215																																														
User-Defined ID:																																															
Cross Reference Number:	239002 A3.02																																														
Topic:	ILT-5001A-3d-002																																														
Num Field 1:	2015 NRC																																														
Num Field 2:	N/A																																														
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Psychometrics																																															
Level of Knowledge	Difficulty	Time Allowance (minutes)	RO																																												
MEMORY			10CRF55.41(b)(3)																																												
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K/A System:	239002 Relief/Safety Valves		Importance: RO / SRO 4.3/ 4.3																																												
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REQUIRED MATERIALS:	None																																														
Notes and Comments:	None																																														

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

18

ID: 1118556

Points: 1.00

A transient has resulted in the following conditions on Unit 3:

- A loss of normal feedwater has occurred
- RPV level has lowered to -60 inches
- All automatic initiations and isolations have occurred as required
- NO operator actions have been performed

Based on the above conditions, select the status of the Standby Gas Treatment (SBGT) System fans and filter train status.

Standby Gas Treatment Fans ____ (1) ____ started and the dampers for the ____ (2) ____ SBGT Filter Train(s) is/are open.

- A. (1) B and C
(2) B only
- B. (1) A and C
(2) A and B
- C. (1) B and C
(2) A and B
- D. (1) A, B, and C
(2) A and B

Answer: C

Answer Explanation		
Choice		Basis or Justification
Correct:	C	A Group III PCIS isolation has occurred due to reactor level being less than +1 inch. Since the transient occurred on Unit 3 the B and C SBGT fans will automatically start and both the A and B SBGT filter trains will align for service.
Distractors:	A	Incorrect. Both the A and B SBGT filter trains will align for service, not just the B train. Plausible if the candidate thinks that only the B filter train lines up for Unit 3 only.
	B	Incorrect. The A SBGT fan will only start on a Group III isolation signal on Unit 2. Not the case here.
	D	Incorrect. Plausible based on that all three SBGT fans start with both filter trains align if a dual-unit transient occurs. This event is on Unit 3 only.

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

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:	1118556																																														
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Topic:	ILT-5009A-4a-002 Rx Lo Lo Level / status of vent and sbgt																																														
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Comments:	<table border="1"> <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> <tr> <td>HIGH</td> <td></td> <td></td> <td>10CRF55.41(b)(9)</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 Item <input type="checkbox"/> Other Exam Bank: <input checked="" type="checkbox"/> ILT Exam Bank </td> </tr> <tr> <td>Reference(s):</td> <td colspan="3">GP-8.B; GP-8.B COL</td> </tr> <tr> <td>Learning Objective:</td> <td colspan="3">PLOT-5009a-3a</td> </tr> <tr> <td>K/A System:</td> <td>261000 – Standby Gas Treatment System</td> <td colspan="2">Importance: RO / SRO 3.0 / 2.9</td> </tr> <tr> <td colspan="4">K/A Statement: A3.03 – Ability to monitor automatic operations of the STANDBY GAS TREATMENT SYSTEM including: Valve operation</td> </tr> <tr> <td>REQUIRED MATERIALS:</td> <td colspan="3">NONE</td> </tr> <tr> <td>Notes and Comments:</td> <td colspan="3"></td> </tr> </table>			Psychometrics				Level of Knowledge	Difficulty	Time Allowance (minutes)	RO	HIGH			10CRF55.41(b)(9)	Source Documentation				Source:	<input type="checkbox"/> New Exam Item <input type="checkbox"/> Previous NRC Exam: <input type="checkbox"/> Modified Bank Item <input type="checkbox"/> Other Exam Bank: <input checked="" type="checkbox"/> ILT Exam Bank			Reference(s):	GP-8.B; GP-8.B COL			Learning Objective:	PLOT-5009a-3a			K/A System:	261000 – Standby Gas Treatment System	Importance: RO / SRO 3.0 / 2.9		K/A Statement: A3.03 – Ability to monitor automatic operations of the STANDBY GAS TREATMENT SYSTEM including: Valve operation				REQUIRED MATERIALS:	NONE			Notes and Comments:			
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REQUIRED MATERIALS:	NONE																																														
Notes and Comments:																																															

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

19

ID: 1102305

Points: 1.00

During performance of GP-11.E, "Reactor Protection System - Scram and ARI Reset" the URO takes the "Scram Reset" switch in the Group 1 and 4 position.

With respect to the four (4) white scram group light on the RPS panels (C015 and C017), this action will cause _____.

- A. four (4) white scram group lights to light on the C015 panel ONLY
- B. four (4) white scram group lights to light on the C017 panel ONLY
- C. two (2) white scram group lights to light on BOTH C015 and C017 panels
- D. no change in indication until the "Scram Reset" switch is taken to position Group 2 and 3.

Answer: C

Answer Explanation		
Choice		Basis or Justification
Correct:	C	When the scram reset switch is taken to the position 1 and 4. It closes the scram inlet and outlet valves for two of the four rod groups. The white lights on both the C015 and C017 panels are indications of the rod group reset.
Distractors:	A	Plausible if the candidate does not understand how the scram reset logic functions. The candidate could believe that turn the switch to position 1 and 4 resets the "A" logic causing all 4 lights on C015 to light.
	B	Plausible if the candidate does not understand how the scram reset logic functions. The candidate could believe that turn the switch to position 1 and 4 resets the "B" logic causing all 4 lights on C017 to light.
	D	Plausible if the candidate does not understand how the scram reset logic functions. GP-11.E for the scram reset does not have the operator check the lights until the scram reset switch is taken to position 1 and 4 then 2 and 3. At this point all for the white lights would be lit.

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

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:	1102305																																														
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Cross Reference Number:	212000 A4.14																																														
Topic:	ILT-5060F-9g-001																																														
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Reference(s):	GP-11E, M-1-S-54																																														
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REQUIRED MATERIALS:	None																																														
Notes and Comments:	None																																														

EXAMINATION ANSWER KEY

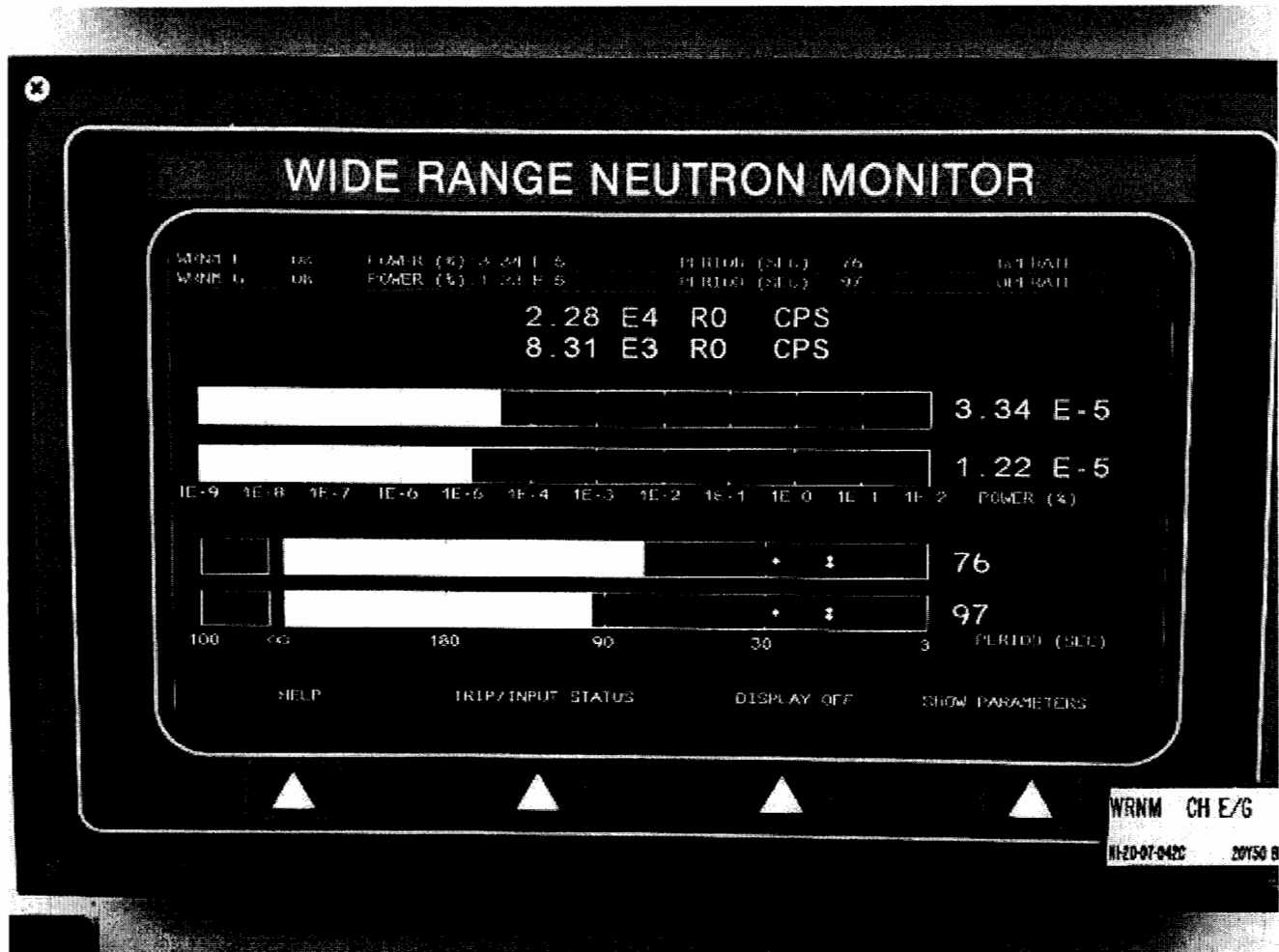
2015 NRC Reactor Operator Exam - Revision 0

20

ID: 1104746

Points: 1.00

- A Reactor startup is in progress on Unit 2.
- The start up has exceeded three doublings of the initial count rate.
- A picture of a WRNM display is below.



Choose the correct statement with respect to the reactor startup.

Control rod withdraw can _____.

- A. continue. Use single notch withdraw.
- B. continue. Use continuous withdraw.
- C. NOT continue. Allow period to drop to 150 seconds before continuing to withdraw control rods.
- D. NOT continue. Allow period to drop to 250 seconds before continuing to withdraw control rods.

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

Answer: D

Answer Explanation		
Choice		Basis or Justification
Correct:	D	The indications on the WRNM indicate that the reactor is below the point of adding heat and Period is approximately 100 seconds. Per GP-2 while in this condition the operator must allow period to decay to 250 second before beginning to withdraw control rods.
Distractors:	A	Plausible if the candidate does not recall the requirement to allow period to decay or if the candidate cannot properly interpret the indications on the WRNM display.
	B	Plausible if the candidate does not recall the requirement to allow period to decay or if the candidate cannot properly interpret the indications on the WRNM display.
	C	Plausible if the candidate does not recall the value at which rod withdraw can begin again.

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

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:	1.00																																														
System ID:	1104746																																														
User-Defined ID:																																															
Cross Reference Number:	215004A4.03																																														
Topic:	ILT5060C-9a-001																																														
Num Field 1:	2015 NRC																																														
Num Field 2:																																															
Text Field:																																															
Comments:	<table border="1"> <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> <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="2"> <input checked="" type="checkbox"/> New Exam item <input type="checkbox"/> Modified Bank <input type="checkbox"/> ILT Exam Bank </td> <td> <input type="checkbox"/> Previous NRC Exam <input type="checkbox"/> Other Exam Bank </td> </tr> <tr> <td>Reference(s):</td> <td colspan="3">GP-2</td> </tr> <tr> <td>Learning Objective:</td> <td colspan="3">PLOT-5060C-9a</td> </tr> <tr> <td>K/A System:</td> <td colspan="2">215004 Source Range Monitor (SRM) System</td> <td>Importance: RO / SRO 2.9/ 2.7</td> </tr> <tr> <td>K/A Statement:</td> <td colspan="3">A4.03 - Ability to manually operate and/or monitor in the control room: CRT Displays: Plant-Specific</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> </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"/> ILT Exam Bank		<input type="checkbox"/> Previous NRC Exam <input type="checkbox"/> Other Exam Bank	Reference(s):	GP-2			Learning Objective:	PLOT-5060C-9a			K/A System:	215004 Source Range Monitor (SRM) System		Importance: RO / SRO 2.9/ 2.7	K/A Statement:	A4.03 - Ability to manually operate and/or monitor in the control room: CRT Displays: Plant-Specific			REQUIRED MATERIALS:	None			Notes and Comments:	None		
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REQUIRED MATERIALS:	None																																														
Notes and Comments:	None																																														

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

21

ID: 994785

Points: 1.00

Given the following:

- A AIR COMP TROUBLE (216 B-1) alarm is received
- The 'A' Air Compressor (2AK001) indicates "tripped" on Panel 20C012
- Investigation shows the 'A' Air Compressor tripped on high receiver pressure
- 'A' Instrument Air Receiver (2AT006) pressure is currently 105 psig

Per ARC 216 B-1, which one of the following is correct regarding reset of the 'A' Air Compressor trip?

- A. Air receiver pressure does NOT allow the air compressor trip to be reset.
- B. Air receiver pressure allows the air compressor trip to automatically reset.
- C. The trip can only reset by depressing the "Reset-Start" button locally at the compressor.
- D. The trip can only be reset by placing the compressor control switch to STOP at Panel 20C012.

Answer: C

Answer Explanation		
Correct:	C	Per ARC-216 B-1, a high receiver pressure trip occurs at 120 psig. Since normal system pressure is 100 to 115 psig, current receiver pressure (105 psig) allows compressor reset. Per the NOTE in ARC-216 B-1, a compressor trip can only be reset locally by depressing the "Reset-Start" button located at the tripped compressor.
Distractors:	A	Per ARC-216 B-1, a high receiver pressure trip occurs at 120 psig. Since normal system pressure is 100 to 115 psig, current receiver pressure (105 psig) allows compressor reset.
	B	Per the NOTE in ARC-216 B-1, a compressor trip can only be reset locally by depressing the "Reset-Start" button located at the tripped compressor.
	D	Per the NOTE in ARC-216 B-1, a compressor trip can only be reset locally by depressing the "Reset-Start" button located at the tripped compressor.

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

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:	994785		
User-Defined ID:	ILT-5036-8C-001		
Cross Reference Number:	300000 2.4.31		
Topic:	ILT-5036-8c-001 Given the following: *A AIR COMP TROUBLE (216 B-1) alarm is received. *The 'A' Air		
Num Field 1:	2015 NRC		
Num Field 2:			
Text Field:	NRC-09-1		
Comments:	Psychometrics		
	Level of Knowledge	Difficulty	Time Allowance (minutes)
	HIGH		RO
	10CRF55.41(b)(7)		
	Source Documentation		
	Source:	New Exam item Modified Bank XILT Exam Bank	Previous NRC Exam Other Exam Bank
	Reference(s):	ARC-216 B-1	
	Learning Objective:	PLOT-5036-8c	
	K/A System:	300000 Instrument Air System	Importance: RO / SRO 4.2/ 4.1
	K/A Statement:	2.4.31 Knowledge of annunciator alarms, indications, or response procedures.	
	REQUIRED MATERIALS:	None	
	Notes and Comments:	None	

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

22

ID: 1119137

Points: 1.00

Per procedure SE-13, "Loss of a 125 or 250 VDC Safety Related Bus", loss of power to 125 VDC Distribution Panel 20D021 results in the (1) Diesel Generator being INOP due to a loss of (2) logic.

- A. (1) E-1
(2) RHR
- B. (1) E-1
(2) Core Spray
- C. (1) E-2
(2) RHR
- D. (1) E-2
(2) Core Spray

Answer: B

Answer Explanation		
Correct:	B	Per SE-13, a loss of 20D021 results in the E-1 Diesel Generator being INOP due to a loss of Core Spray logic.
Distractors:	A	Plausible if the candidate does not understand that Diesel Generator logic is from Core Spray logic and not RHR logic.
	C	Plausible if the candidate confuses the 20D021 and 20D022 distribution panel loads.
	D	Plausible if the candidate confuses the 20D021 and 20D022 distribution panel loads. Plausible if the candidate does not understand that Diesel Generator logic is from Core Spray logic and not RHR logic

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

Question 22 Info																																															
Question Type:	Multiple Choice																																														
Status:	Active																																														
Always select on test?	No																																														
Authorized for practice?	No																																														
Points:	1.00																																														
Time to Complete:	3																																														
Difficulty:	0.00																																														
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User-Defined ID:	ILT-5057-6B-002																																														
Cross Reference Number:	263000 2.4.21																																														
Topic:	ILT-5057-6B-003																																														
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Num Field 2:																																															
Text Field:	NRC-09-1																																														
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REQUIRED MATERIALS:	None																																														
Notes and Comments:	None																																														

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

23

ID: 1102784

Points: 1.00

The following conditions exist on Unit 3:

- The Reactor is in Mode 5
- LPRM string replacements are in progress
- SO 10.1.C-3 "Residual Heat Removal System Precise Reactor Temperature Control" is in progress with the following lineup:
 - "C" HPSW pump is in service through the "C" RHR Heat Exchanger
 - "A" RHR pump is in service in shutdown cooling
 - HV-3-32-32228A, "ILRT HPSW Cooling Bypass Valve" is throttled to maintain RPV temperature
- RHR flow is 6000 gpm
- RPV temperature is 110 degrees F. and rising slowly

P&IDs M-315 Sheet 3, and M-361 Sheet 3, are provided for reference.

Per SO 10.1.C-3, in order to lower RPV temperature the operator shall:

- A. raise RHR flow to 7000 gpm.
- B. start a second HPSW Pump.
- C. throttle OPEN HV-3-32-32228A, "ILRT HPSW Cooling Bypass Valve".
- D. throttle CLOSED HV-3-32-32228A, "ILRT HPSW Cooling Bypass Valve".

Answer: C

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

Answer Explanation		
Choice		Basis or Justification
Correct:	C	SO 10.1.C-3 "Residual Heat Removal System Precise Reactor Temperature Control" directs that to adjust RPV temperature, throttle HV-3-32-22228A, ""ILRT HPSW Cooling Bypass Valve" is throttled to maintain RPV temperature. HV-3-32-22228A, ""ILRT HPSW Cooling Bypass Valve" must be throttled open to provide more cooling to the "A" RHR heat exchanger.
Distractors:	A	SO 10.1.B-3 "Residual Heat Removal System Shutdown Cooling Mode Manual Start" has a caution "Do NOT exceed RHR flow rate of 6500 gpm IF in-core instrumentation is NOT supported by blade guides OR fuel bundles on all sides unless greater flow is required to maintain desired Reactor water temperature below Technical Specification limits. Since LPRM strings are being replaced flow can not be raised to 7000 gpm. Plausible if the candidate does not recall this caution.
	B	SO 32.1.A-3, "High Pressure Service Water System Startup and Normal Operations" has a caution "Throttling MO-3-10-089A, "HPSW Hx Outlet" with HPSW in-service in the associated loop, will result in damage to the valves due to high vibration." With the "A" RHR heat Exchanger pressurized this caution applies. Plausible if the candidate does not recall this caution.
	D	Throttling closed HV-3-32-22228A, ""ILRT HPSW Cooling Bypass Valve" would reduce the flow to the "A" RHR heat exchanger and cause temperature to rise. Plausible if the candidate does not understand the valve lineup required to maintain precise temperature control.

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

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:	1.00																																														
System ID:	1102784																																														
User-Defined ID:																																															
Cross Reference Number:	205000K5.03																																														
Topic:	ILT5010-4e-001																																														
Num Field 1:	2015 NRC																																														
Num Field 2:																																															
Text Field:																																															
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Psychometrics																																															
Level of Knowledge	Difficulty	Time Allowance (minutes)	RO																																												
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REQUIRED MATERIALS:	P&IDs M-361 Sheet 3, M-315 Sheet 3																																														
Notes and Comments:	None																																														

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

24

ID: 995190

Points: 1.00

The following conditions exist on Unit 2:

- A reactor startup is in progress
- Critical data has just been recorded
- The "B" and "D" Wide Range Neutron Monitor (WRNM) channels trip INOP simultaneously

The plant impact from the WRNM system will be _____.

- A. alarm ONLY; no rod blocks or scram signals
- B. alarm and rod block ONLY; no scram signals
- C. alarm, rod block, AND half scram ONLY
- D. alarm, rod block, AND full scram

Answer: C

Answer Explanation		
Choice		Basis or Justification
Correct:	C	INOP failure is a "trip" signal. One in each trip system will generate a full scram, the "High/INOP" annunciator, and a control rod block. WRNM "B" is RPS B. WRNM "D" is RPS B. INOP will result in Rod Block and Scram input. RPS Logic for WRNM is 1 out of 4 taken twice. Rod Block, RPS HALF-SCRAM, and Alarm logics are all satisfied.
Distractors:	A	INOP failure is a "trip" signal. One in each trip system will generate a full scram, the "High/INOP" annunciator, and a control rod block. Plausible if candidate does not equate INOP with ROD BLOCK function.
	B	INOP failure is a "trip" signal. One in each trip system will generate a full scram, the "High/INOP" annunciator, and a control rod block. Plausible if candidate does not equate INOP with TRIP function for RPS (HALF SCRAM since both WRNM Channels are RPS B).
	D	A full scram will result from a trip signal in each channel. Plausible if candidate does not recognize that WRNM "B" and "D" are in the same RPS channel.

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

Question 24 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:	995190																																														
User-Defined ID:	13 CERT																																														
Cross Reference Number:	215004 K3.01																																														
Topic:	ILT 5060C-6a-001																																														
Num Field 1:	2015 NRC																																														
Num Field 2:																																															
Text Field:																																															
Comments:	<table border="1"> <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> <tr> <td>HIGH</td> <td></td> <td></td> <td>10CFR55.41(b)(6)</td> </tr> <tr> <th colspan="4">Source Documentation</th> </tr> <tr> <td>Source:</td> <td colspan="2">New Exam item Modified Bank XILT Exam Bank</td> <td>Previous NRC Exam Other Exam Bank</td> </tr> <tr> <td>Reference(s):</td> <td colspan="3">ARC-210 J-2</td> </tr> <tr> <td>Learning Objective:</td> <td colspan="3">PLOT - 5060C-6a</td> </tr> <tr> <td>K/A System:</td> <td colspan="2">215004 - Source Range Monitor (SRM) System</td> <td>Importance: RO / SRO 3.4/ 3.4</td> </tr> <tr> <td>K/A Statement:</td> <td colspan="3">K3.01 – Knowledge of the effect that a loss or malfunction of the SOURCE RANGE MONITOR (SRM) SYSTEM will have on the following: RPS</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> </table>			Psychometrics				Level of Knowledge	Difficulty	Time Allowance (minutes)	RO	HIGH			10CFR55.41(b)(6)	Source Documentation				Source:	New Exam item Modified Bank XILT Exam Bank		Previous NRC Exam Other Exam Bank	Reference(s):	ARC-210 J-2			Learning Objective:	PLOT - 5060C-6a			K/A System:	215004 - Source Range Monitor (SRM) System		Importance: RO / SRO 3.4/ 3.4	K/A Statement:	K3.01 – Knowledge of the effect that a loss or malfunction of the SOURCE RANGE MONITOR (SRM) SYSTEM will have on the following: RPS			REQUIRED MATERIALS:	NONE			Notes and Comments:	None		
Psychometrics																																															
Level of Knowledge	Difficulty	Time Allowance (minutes)	RO																																												
HIGH			10CFR55.41(b)(6)																																												
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Source:	New Exam item Modified Bank XILT Exam Bank		Previous NRC Exam Other Exam Bank																																												
Reference(s):	ARC-210 J-2																																														
Learning Objective:	PLOT - 5060C-6a																																														
K/A System:	215004 - Source Range Monitor (SRM) System		Importance: RO / SRO 3.4/ 3.4																																												
K/A Statement:	K3.01 – Knowledge of the effect that a loss or malfunction of the SOURCE RANGE MONITOR (SRM) SYSTEM will have on the following: RPS																																														
REQUIRED MATERIALS:	NONE																																														
Notes and Comments:	None																																														

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

25

ID: 1102869

Points: 1.00

- Drywell pressure is 70 psig due to a LOCA on Unit 2.
- Containment venting is in progress using the "A" Standby Gas Treatment (SBGT) filter train via the 18 inch Torus vent.

Based on the above conditions, what is the impact to the SBGT system efficiency and the required operator action as moisture reaches the filter train charcoal filter?

The "A" SBGT efficiency will ____ (1) ____, the operator shall ____ (2) ____.

- A. (1) lower
(2) secure venting in accordance with T-200D-2, Containment Venting Via the Torus 18 Inch Vent to SBGT
- B. (1) lower
(2) place the "B" SBGT filter train in service in accordance with SO 9A.1.B, Standby Gas Treatment System Manual Startup
- C. (1) be unaffected
(2) continue to monitor Drywell pressure in accordance with T-102, Primary Containment Control
- D. (1) be unaffected
(2) maximize SBGT flow by placing the "B" SBGT train in service in accordance with SO 9A.1.B, Standby Gas Treatment System Manual Startup

Answer: B

Answer Explanation		
Choice		Basis or Justification
Correct:	B	The SBGT Design Basis Document states that SBGT efficiency will drop if the charcoal is wet. T-200 directs the operator to remove one SBGT Filter from service before venting begins. This is to maintain the other train for future use. With the Drywell pressure above the vent pressure the "B" SBGT filter needs to be placed in service so does rates can be minimized as venting continues.
Distractors:	A	Drywell pressure is still above the pressure required for venting. There for securing the vent lineup would not be the correct action to take. Plausible if the candidate does not recall the required vent pressure.
	C	The SBGT Design Basis Document states that SBGT efficiency will drop if the charcoal is wet. Plausible if the candidate does not understand how SBGT Charcoal functions to remove radionuclides.
	D	The SBGT Design Basis Document states that SBGT efficiency will drop if the charcoal is wet. If the "A" SBGT filter was efficient, T-200 would require that the "B" SBGT filter remain out of service. Plausible if the candidate does not understand how SBGT Charcoal functions to remove radionuclides. Plausible if the candidate does not recall the purpose of keeping the second SBGT filter train out of service.

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

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:	1.00																																														
System ID:	1102869																																														
User-Defined ID:																																															
Cross Reference Number:	261000A2-04																																														
Topic:	ILT5009A-10c-001																																														
Num Field 1:	2015 NRC																																														
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Text Field:																																															
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Psychometrics																																															
Level of Knowledge	Difficulty	Time Allowance (minutes)	RO																																												
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REQUIRED MATERIALS:	None																																														
Notes and Comments:	None																																														

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

26

ID: 1102905

Points: 1.00

In accordance with procedure T-102, "Primary Containment Control", when RCIC suction is aligned to the Torus, RCIC must be secured when Torus level reaches ____ (1) ____ in order to prevent ____ (2) ____.

- A. (1) 6 ft
(2) loss of NPSH due to vortexing
- B. (1) 6 ft
(2) over pressurizing the Torus due to uncovering the RCIC exhaust line
- C. (1) 9.5 ft
(2) loss of NPSH due to vortexing
- D. (1) 9.5 ft
(2) over pressurizing the Torus due to uncovering the RCIC exhaust line

Answer: A

Answer Explanation		
Choice		Basis or Justification
Correct:	A	T-102, "Primary Containment Control" states that RCIC is secured when Torus level reaches 6 ft due to vortexing.
Distractors:	B	T-102 requires HPCI to be removed from service due to pressurizing containment. Plausible if the candidate confuses the reason for securing HPCI with RCIC.
	C	Plausible if the candidate confuses the level to secure RCIC with the level to secure HPCI.
	D	Plausible if the candidate confuses the level to secure RCIC with the level to secure HPCI. Plausible if the candidate confuses the reason for securing HPCI with RCIC.

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

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:	0.00																																														
System ID:	1102905																																														
User-Defined ID:																																															
Cross Reference Number:	217000K1.03																																														
Topic:	ILT-5013-5c-006																																														
Num Field 1:	2015 NRC																																														
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Level of Knowledge	Difficulty	Time Allowance (minutes)	RO																																												
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Reference(s):	T-102																																														
Learning Objective:	PLOT 5013-5c																																														
K/A System:	217000 Reactor Core Isolation Cooling System (RCIC)		Importance RO / SRO 3.6/ 3.6																																												
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REQUIRED MATERIALS:	None																																														
Notes and Comments:	None																																														

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

27

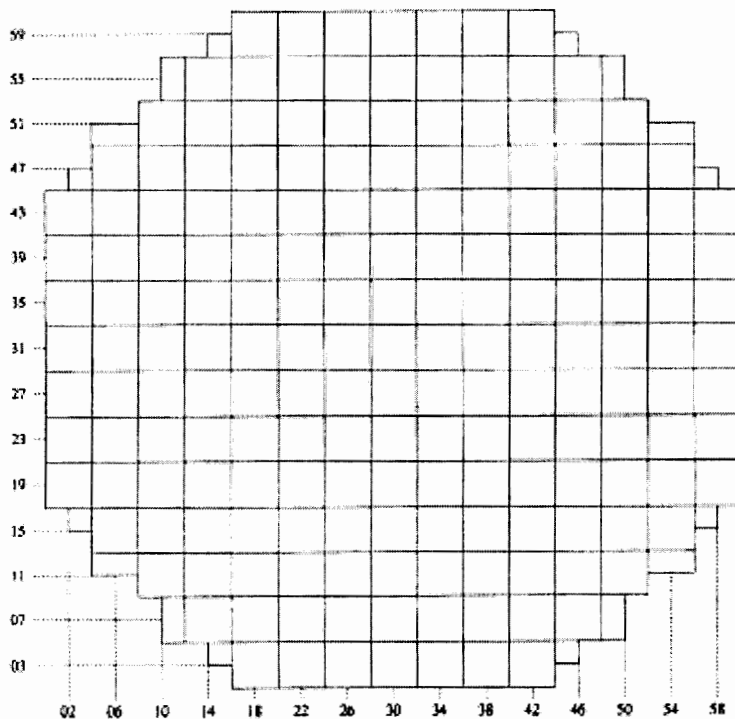
ID: 1102977

Points: 1.00

A Reactor startup is in-progress on Unit 3.

- Reactor Power is 50%.
- Rod 02-27 is selected and is to be withdrawn to position 48.

A core map is provided below for reference.



For the above conditions, select the correct statement below with respect to the Rod Block Monitor (RBM) response.

The RBM will _____.

- A. NOT initiate a rod block on rod 02-27 as local power rises.
- B. initiate a rod block on rod 02-27 when local power rises to 114%.
- C. initiate a rod block on rod 02-27 when local power rises to 119%.
- D. initiate a rod block on rod 02-27 when local power rises to 124%.

Answer: A

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

Answer Explanation		
Choice		Basis or Justification
Correct:	A	The RBM is bypassed when an edge rod is selected. Rod 02-27 is an edge rod. The rod block monitor will not initiate rod blocks.
Distractors:	B	Plausible if the candidate does not recall that the RBM is bypassed when an edge rod is selected. The setpoint of 114% is the RBM High Trip Setpoint (HTSP) for Unit 3. The Low Trip Setpoint (LTSP) is the applicable RBM setpoint at 50% reactor power.
	C	Plausible if the candidate does not recall that the RBM is bypassed when an edge rod is selected. The setpoint of 119% is the RBM Intermediate Trip Setpoint (ITSP) for Unit 3. The Low Trip Setpoint (LTSP) is the applicable RBM setpoint at 50% reactor power.
	D	Plausible if the candidate does not recall that the RBM is bypassed when an edge rod is selected. The setpoint of 124% is the RBM LTSP for Unit 3. The Low Trip Setpoint (LTSP) is the applicable RBM setpoint at 50% reactor power.

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

Question 27 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:	1102977																																														
User-Defined ID:																																															
Cross Reference Number:	215002K1.06																																														
Topic:	ILT-5060-5h-001																																														
Num Field 1:	2015 NRC																																														
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Psychometrics																																															
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REQUIRED MATERIALS:	None																																														
Notes and Comments:	None																																														

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

28

ID: 1103318

Points: 1.00

A loss of power to the "B" RPS bus will cause a loss of power to which of the Main Steam Line Radiation Monitors listed below?

- A. A and B
- B. A and C
- C. B and D
- D. C and D

Answer: C

Answer Explanation		
Choice		Basis or Justification
Correct:	C	B RPS supplies power to the "B" and "D" radiation monitors.
Distractors:	A	Plausible if the candidate does not remember the RPS power supply logic and confuses it with other rad monitor logic that is "A" and "B" for trips.
	B	Plausible if the candidate does not remember the RPS power supply logic and confuses it with the "A" RPS power supply.
	D	Plausible if the candidate does not remember the RPS power supply logic and confuses it with other rad monitor logic that is "C" and "D" for trips.

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

Question 28 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:	1103318																																														
User-Defined ID:																																															
Cross Reference Number:	272000K2.01																																														
Topic:	ILT-5063-2a-001																																														
Num Field 1:	2015 NRC																																														
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K/A Statement:	K2.01- Knowledge of electrical supplies to the following: Main steamline radiation monitors																																														
REQUIRED MATERIALS:	None																																														
Notes and Comments:	None																																														

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

29

ID: 1103404

Points: 1.00

Unit 2 is operating at 70% power with a reactor startup in progress. The following conditions exist:

- "A" and "B" Condensate pumps are in-service
- "B" and "C" Reactor feed pumps are in-service
- RPV level is at 23 inches being controlled in automatic
- "A" Steam Jet Air Ejector is in-service
- "A" Steam packing exhauster is in-service
- MO-2-05-2104A and MO-2-05-2105A, "A" SPE/SJAE Isolation Valves fail closed due to a malfunction

Based on the above conditions, what is (1) the plant impact, if any, and (2) the required Operator response?

- A. (1) no impact
(2) continue with the startup
- B. (1) lowering main condenser vacuum
(2) place the "B" SJAE in-service
- C. (1) loss of feedwater flow
(2) place the Mode Switch in Shutdown
- D. (1) rising Main Stack radiation levels
(2) place the "B" SPE in-service

Answer: B

Answer Explanation		
Choice		Basis or Justification
Correct:	B	The SPE/SJAE isolation valves are interlocked with the steam isolation valve for the SJAE. When MO-2104A/MO-2105A fail closed they cause an isolation of the "A" SJAE. This will cause a loss of vacuum because non-condensable gasses are no longer being removed. Normal operation is for the MO-2104B/MO-2105B to be open. This facilitates placing the "B" SJAE in service. Placing the "B" SJAE in-service will stop the vacuum drop.
Distractors:	A	The SPE/SJAE isolation valves are interlocked with the steam isolation valve for the SJAE. When MO-2104A/MO-2105A fail closed they cause an isolation of the "A" SJAE. This will cause a loss of vacuum because non-condensable gasses are no longer being removed. Plausible if the candidate forgets the interlock between MO-2104/MO-2105 and SJAE.

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

C	Since MO-2104B and 2105B are normally open there is not a loss of feedwater flow to the RPV. Plausible if the candidate does not recall that MO-2104B and 2105B are normally open. If a complete loss of feedwater had occurred then placing the Mode Switch in shutdown would be an appropriate action.
D	When MO-2104A and MO-2105A close the "A" SPE would isolate. This would make Main Stack radiation levels drop not rise. Plausible is the candidate does not understand the operation of the SPE. Since the "A" SPE will isolate place the "B" SPE would be a correct action.

Question 29 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:	1103404																																														
User-Defined ID:																																															
Cross Reference Number:	256000K3.08																																														
Topic:	ILT-5005-6e-001																																														
Num Field 1:	2015 NRC																																														
Num Field 2:																																															
Text Field:																																															
Comments:	<table><tr><th colspan="4">Psychometrics</th></tr><tr><td>Level of Knowledge</td><td>Difficulty</td><td>Time Allowance (minutes)</td><td>RO</td></tr><tr><td>HIGH</td><td></td><td></td><td>10CRF55.41(b)(7)</td></tr><tr><th colspan="4">Source Documentation</th></tr><tr><td>Source:</td><td colspan="2">XNew Exam item Modified Bank ILT Exam Bank</td><td>Previous NRC Exam Other Exam Bank</td></tr><tr><td>Reference(s):</td><td colspan="3">M-307, PLOT 5005</td></tr><tr><td>Learning Objective:</td><td colspan="3">PLOT 5005-6e</td></tr><tr><td>K/A System:</td><td colspan="2">256000 Reactor Condensate System</td><td>Importance: RO / SRO 2.8/ 2.8</td></tr><tr><td>K/A Statement:</td><td colspan="3">K3.08 - Knowledge of the effect that a loss or malfunction of the REACTOR CONDENSATE SYSTEM will have on the following: SJAE</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></table>			Psychometrics				Level of Knowledge	Difficulty	Time Allowance (minutes)	RO	HIGH			10CRF55.41(b)(7)	Source Documentation				Source:	XNew Exam item Modified Bank ILT Exam Bank		Previous NRC Exam Other Exam Bank	Reference(s):	M-307, PLOT 5005			Learning Objective:	PLOT 5005-6e			K/A System:	256000 Reactor Condensate System		Importance: RO / SRO 2.8/ 2.8	K/A Statement:	K3.08 - Knowledge of the effect that a loss or malfunction of the REACTOR CONDENSATE SYSTEM will have on the following: SJAE			REQUIRED MATERIALS:	None			Notes and Comments:	None		
Psychometrics																																															
Level of Knowledge	Difficulty	Time Allowance (minutes)	RO																																												
HIGH			10CRF55.41(b)(7)																																												
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REQUIRED MATERIALS:	None																																														
Notes and Comments:	None																																														

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

30

ID: 993375

Points: 1.00

Which one of the following identifies the design function of the vacuum breakers that connect the Secondary Containment to the Primary Containment?

Vacuum breakers open to prevent.....

- A. high Reactor Building pressures from actuating the Reactor Building blowout panels.
- B. low Reactor Building pressures from actuating the Reactor Building blowout panels.
- C. high Primary Containment pressures from exceeding Primary Containment design limits.
- D. low Primary Containment pressures from exceeding Primary Containment design limits.

Answer: D

Answer Explanation		
Choice		Basis or Justification
Correct:	D	Vacuum breakers open on high Reactor Building (RB) to Torus DP to limit Primary Containment (PC) pressure drop that could exceed the negative PC design pressure.
Distractors:	A	Plausible if the candidate does not understand the purpose of the vacuum breakers and believe the vacuum breakers open on high RB pressure vs low containment pressure.
	B	Plausible if the candidate does not understand the purpose of the vacuum breakers and believe the vacuum breakers open on low RB pressure vs low containment pressure.
	C	Plausible if the candidate does not understand the purpose of the vacuum breakers and believe the vacuum breakers open on high containment pressure RB pressure vs low containment pressure.

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

Question 30 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:	993375																																														
User-Defined ID:	ILT-5009-4A-001																																														
Cross Reference Number:	290001K5.01																																														
Topic:	ILT-5009-3a-001 Design function of Vacuum Breakers																																														
Num Field 1:	2015 NRC																																														
Num Field 2:	N/A																																														
Text Field:	A																																														
Comments:	<table border="1"> <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> <tr> <td>MEMORY</td> <td></td> <td></td> <td>10CRF55.41(b)(9)</td> </tr> <tr> <th colspan="4">Source Documentation</th> </tr> <tr> <td>Source:</td> <td colspan="2">New Exam item Modified Bank XILT Exam Bank</td> <td>Previous NRC Exam Other Exam Bank</td> </tr> <tr> <td>Reference(s):</td> <td colspan="3">PLOT 5009</td> </tr> <tr> <td>Learning Objective:</td> <td colspan="3">PLOT-5009-3a</td> </tr> <tr> <td>K/A System:</td> <td colspan="2">290001 Secondary Containment</td> <td>Importance: RO / SRO 3.3/ 3.4</td> </tr> <tr> <td>K/A Statement:</td> <td colspan="3">K5.01- Knowledge of the operational implications of the following concepts as they apply to SECONDARY CONTAINMENT: Vacuum breaker 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> </table>			Psychometrics				Level of Knowledge	Difficulty	Time Allowance (minutes)	RO	MEMORY			10CRF55.41(b)(9)	Source Documentation				Source:	New Exam item Modified Bank XILT Exam Bank		Previous NRC Exam Other Exam Bank	Reference(s):	PLOT 5009			Learning Objective:	PLOT-5009-3a			K/A System:	290001 Secondary Containment		Importance: RO / SRO 3.3/ 3.4	K/A Statement:	K5.01- Knowledge of the operational implications of the following concepts as they apply to SECONDARY CONTAINMENT: Vacuum breaker operation			REQUIRED MATERIALS:	None			Notes and Comments:	None		
Psychometrics																																															
Level of Knowledge	Difficulty	Time Allowance (minutes)	RO																																												
MEMORY			10CRF55.41(b)(9)																																												
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K/A Statement:	K5.01- Knowledge of the operational implications of the following concepts as they apply to SECONDARY CONTAINMENT: Vacuum breaker operation																																														
REQUIRED MATERIALS:	None																																														
Notes and Comments:	None																																														

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

31

ID: 1104771

Points: 1.00

During a Radwaste Floor Drain Sample Tank release to the Conowingo Pond per station procedures, the following Control Room alarms come in:

- RADWASTE DISCH HI RADIATION (218 B-2)
- RADWASTE DISCHARGE TO CANAL INTERLOCK TRIP (216 L-3)

Based on the above alarm conditions the release will automatically isolate ____ (1) ____.

The radiation units associated with this release are measured in ____ (2) ____.

- A. (1) immediately
(2) mRem
- B. (1) immediately
(2) counts/second
- C. (1) after a time delay
(2) mRem
- D. (1) after a time delay
(2) counts/second

Answer: B

Answer Explanation		
Choice		Basis or Justification
Correct:	B	High dose rate isolates with no time delay. The dose rate is calculated in counts per second as determined by procedures ST-C-095-805-2 "Liquid Radwaste Discharge".
Distractors:	A	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.
	C	There is no time delay. Plausible if the candidate does not understand the Radwaste isolation logic. 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	There is no time delay. Plausible if the candidate does not understand the Radwaste isolation logic.

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

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:	1104771		
User-Defined ID:			
Cross Reference Number:	268000K501		
Topic:	ILT-5020-4a-001		
Num Field 1:	2015 NRC		
Num Field 2:			
Text Field:			
Comments:	Psychometrics		
	Level of Knowledge	Difficulty	Time Allowance (minutes)
	HIGH		10CRF55.41(b)(13)
	Source Documentation		
	Source:	New Exam item Modified Bank XILT Exam Bank	
	Reference(s):	PLOT-5063, ARC-218 B-2, ARC 216 L-3, ST-C-095-805-2	
	Learning Objective:	PLOT-5020-3a	
	K/A System:	268000 Radwaste	Importance: RO / SRO 2.7/ 3.0
	K/A Statement:	K5.01 - Knowledge of the operational implications of the following concepts as they apply to RADWASTE: Units of radiation, dose, and dose rate	
	REQUIRED MATERIALS:	None	
	Notes and Comments:	None	

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

32

ID: 1119138

Points: 1.00

Unit 3 is operating at 50% power when a sustained loss of Instrument Air occurs.

A loss of Instrument Air header pressure causes the ____ (1) ____ Main Steam Isolation Valves close.
This will result in a ____ (2) ____ scram.

- A. (1) inboard
(2) half
- B. (1) inboard
(2) full
- C. (1) outboard
(2) half
- D. (1) outboard
(2) full

Answer: D

Answer Explanation		
Choice	Basis or Justification	
Correct:	D	The outboard Main Steam Isolation Valves (MSIVs) do not have accumulators to hold the valves open. As Instrument Air pressure lowers the MSIVs will close. 3 of the 4 MSIV lines closing will generate a full scram signal.
Distractors:	A	Inboard MSIVs use Instrument Nitrogen as the motive force. Inboard MSIVs also have accumulators that will both hold the MSIVs open and provide the force to rapidly close the MSIVs. Plausible if the candidate does not recall the motive force for the inboard MSIVs and is not familiar with the arrangement of the accumulator. Plausible if the candidate is not familiar with the RPS logic for MSIV closure.
	B	Inboard MSIVs use Instrument Nitrogen as the motive force. Inboard MSIVs also have accumulators that will both hold the MSIVs open and provide the force to rapidly close the MSIVs. Plausible if the candidate does not recall the motive force for the inboard MSIVs.
	C	Plausible if the candidate is not familiar with the RPS logic for MSIV closure.

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

Question 32 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:	1119138																																														
User-Defined ID:																																															
Cross Reference Number:	239001K6.02																																														
Topic:	ILT-5001A-7b-002																																														
Num Field 1:	2015 NRC																																														
Num Field 2:																																															
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Psychometrics																																															
Level of Knowledge	Difficulty	Time Allowance (minutes)	RO																																												
MEMORY			10CRF55.41(b)(7)																																												
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Learning Objective:	PLOT-5001A-7b																																														
K/A System:	239001 Main and Reheat Steam System		Importance: RO / SRO 3.2 / 3.2																																												
K/A Statement:	K6..02 - Knowledge of the effects that a loss or malfunction of the following will have on the MAIN AND REHEAT STEAM SYSTEM: Plant air system																																														
REQUIRED MATERIALS:	None																																														
Notes and Comments:	None																																														

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

33

ID: 1118749

Points: 1.00

Unit 3 RWCU is operating in the Dump Mode to the Main Condenser.

Dump flow is 100 gpm when pressure downstream of CV-55 "Dump Controller" rises to 190 psig.

Based on the above information Dump Flow will?

- A. lower to 0 gpm.
- B. lower to 50 gpm.
- C. lower until downstream pressure is below 190 psig.
- D. remain at 100 gpm.

Answer: A

Answer Explanation		
Choice		Basis or Justification
Correct:	A	A downstream pressure of 190 psig will cause an isolation of CV-55. This will cause dump flow to go to 0 gpm.
Distractors:	B	Plausible if the candidate does not understand that CV-55 only has manual control and believes that there is an automatic feedback mechanism to the control valve.
	C	Plausible if the candidate does not understand that CV-55 only has manual control and believes that there is an automatic feedback mechanism to the control valve.
	D	Plausible if the candidate does not understand how the control circuit to CV-55 works or believes that the setpoint for isolation is above 190 psig.

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

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:	1.00																																														
System ID:	1118749																																														
User-Defined ID:																																															
Cross Reference Number:	204000A2.14																																														
Topic:	ILT-5012-5g-002																																														
Num Field 1:	2015 NRC																																														
Num Field 2:																																															
Text Field:																																															
Comments:	<table border="1"> <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> <tr> <td>HIGH</td> <td></td> <td></td> <td>10CRF55.41(b)(5)</td> </tr> <tr> <th colspan="4">Source Documentation</th> </tr> <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> <td> <input type="checkbox"/> Previous NRC Exam <input type="checkbox"/> Other Exam Bank </td> </tr> <tr> <td>Reference(s):</td> <td colspan="3">PLOT-5012</td> </tr> <tr> <td>Learning Objective:</td> <td colspan="3">PLOT 5012-5g</td> </tr> <tr> <td>K/A System:</td> <td colspan="2">204000 Reactor Water Cleanup System</td> <td>Importance RO / SRO 2.9/ 2.9</td> </tr> <tr> <td>K/A Statement:</td> <td colspan="3">A1.07 - Ability to predict and/or monitor changes in parameters associated with operating the REACTOR WATER CLEANUP SYSTEM controls including: RWCU drain flow</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> </table>			Psychometrics				Level of Knowledge	Difficulty	Time Allowance (minutes)	RO	HIGH			10CRF55.41(b)(5)	Source Documentation				Source:	<input checked="" type="checkbox"/> New Exam item <input type="checkbox"/> Modified Bank <input type="checkbox"/> ILT Exam Bank		<input type="checkbox"/> Previous NRC Exam <input type="checkbox"/> Other Exam Bank	Reference(s):	PLOT-5012			Learning Objective:	PLOT 5012-5g			K/A System:	204000 Reactor Water Cleanup System		Importance RO / SRO 2.9/ 2.9	K/A Statement:	A1.07 - Ability to predict and/or monitor changes in parameters associated with operating the REACTOR WATER CLEANUP SYSTEM controls including: RWCU drain flow			REQUIRED MATERIALS:	None			Notes and Comments:	None		
Psychometrics																																															
Level of Knowledge	Difficulty	Time Allowance (minutes)	RO																																												
HIGH			10CRF55.41(b)(5)																																												
Source Documentation																																															
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Reference(s):	PLOT-5012																																														
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K/A System:	204000 Reactor Water Cleanup System		Importance RO / SRO 2.9/ 2.9																																												
K/A Statement:	A1.07 - Ability to predict and/or monitor changes in parameters associated with operating the REACTOR WATER CLEANUP SYSTEM controls including: RWCU drain flow																																														
REQUIRED MATERIALS:	None																																														
Notes and Comments:	None																																														

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

34

ID: 1103560

Points: 1.00

- A small break LOCA has occurred on Unit 2
- Drywell pressure is 5 psig and slowly rising
- Reactor level is +20 inches and being maintained by reactor feedwater
- Torus sprays are in-service in accordance with T-204-2, "Initiation of Containment Sprays Using RHR".

Based on the above conditions, if Torus pressure drops to 1 psig, Torus sprays ____ (1) ____ automatically isolate and the operator shall ____ (2) ____.

- A. (1) will
(2) Align RHR for normal using T-204, "Initiation of Containment Sprays Using RHR" return to normal section
- B. (1) will
(2) align RHR for normal operations using SO 10.1.A-2, "Residual Heat Removal System Set Up for Automatic Operation"
- C. (1) will not
(2) secure Torus sprays using T-204, "Initiation of Containment Sprays Using RHR"
- D. (1) will not
(2) secure Torus sprays using T-204, "Initiation of Containment Sprays Using RHR" when Torus pressure reaches 0 psig.

Answer: C

Answer Explanation		
Choice		Basis or Justification
Correct:	C	Torus Spray valve MO-2(3)-10-38A(B) does not get an automatic closure signal unless there is a LOCA signal, which there is not. T-204 directs that Torus spray be secured before Torus pressure drops to 2 psig. T-204 also direct the operator how to secure the Torus spray lineup.
Distractors:	A	Torus Spray valve MO-2(3)-10-38A(B) does not get an automatic closure signal unless there is a LOCA signal, which ther is not. Plausible if the candidate confuses the low pressure logic with the LOCA initiation logic.
	B	Torus Spray valve MO-2(3)-10-38A(B) does not get an automatic closure signal unless there is a LOCA signal, wich there is not. Plausible if the candidate confuses the low pressure logic with the LOCA initiation logic.
	D	Torus sprays are to be secured before 2 psig per T-204. Waiting to 0 psig would not be correct. Plausible if the candidate does not understand the requirements of T-204.

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

Question 34 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:	1103560		
User-Defined ID:			
Cross Reference Number:	230000A2.14		
Topic:	ILT 5010-10w-001		
Num Field 1:	2015 NRC		
Num Field 2:			
Text Field:			
Comments:	Psychometrics		
	Level of Knowledge	Difficulty	Time Allowance (minutes)
	HIGH		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 <input type="checkbox"/> Other Exam Bank <input type="checkbox"/> ILT Exam Bank	
	Reference(s):	T-204, Initiation of Containment Sprays Using RHR	
	Learning Objective:	PLOT 5010-10w	
	K/A System:	230000 RHR/LPCI: Torus/Suppression Pool Spray Mode	Importance: RO / SRO 3.2/ 3.5
	K/A Statement:	A2.14 - Ability to (a) predict the impacts for the following on the RHR/LPCI: Torus/Suppression Pool Spray Mode; and (b) based on those predictions, use procedures to correct, control or mitigate the consequences of those abnormal conditions or operations: Low (or negative) suppression pool pressure during system operation	
	REQUIRED MATERIALS:	None	
	Notes and Comments:	None	

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

35

ID: 1103704

Points: 1.00

- The indicating lights for the "A" and "B" Service Water pumps and the "A" and "B" Fuel Pool Service Water Booster pumps are as follows:
 - Green light OFF
 - Red light ON
- Alarm 216 D-5, "B FUEL POOL SERV WATER BOOSTER PUMP OVERCURRENT" is received.

For the above conditions, what is the required operator response per Alarm Response Card 216 D-5?

- A. Trip the "B" Fuel Pool Booster pump.
Place the "C" Fuel Pool Booster pump in-service.
- B. Trip the "B" Fuel Pool Booster pump.
Verify the "C" Fuel Pool Booster pump auto starts.
- C. Verify the "B" Fuel Pool Booster pump trips.
Place the "C" Fuel Pool Booster pump in-service.
- D. Verify the "B" Fuel Pool Booster pump trips.
Verify the "C" Fuel Pool Booster pump auto starts.

Answer: C

Answer Explanation		
Choice		Basis or Justification
Correct:	C	When the overcurrent alarm is received the Booster pump should trip. Starting the "C" pump will return system parameters to normal.
Distractors:	A	Plausible if the candidate does not recall that the Fuel Pool Booster pumps trip when the overcurrent alarm is received. There are pump overcurrent alarms (HPSW for example) that do not trip when the overcurrent alarm is received.
	B	Plausible if the candidate does not recall that the Fuel Pool Booster pumps trip when the overcurrent alarm is received. There are pump overcurrent alarms (HPSW for example) that do not trip when the overcurrent alarm is received. There is no automatic start of the Fuel Pool Water Booster Pumps. Plausible if the candidate does not recall that the Fuel Pool water Booster pumps do not have an auto start feature like the RBCCW pumps for example.
	D	There is no automatic start of the Fuel Pool Water Booster Pumps. Plausible if the candidate does not recall that the Fuel Pool water Booster pumps do not have an auto start feature like the RBCCW pumps for example.

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

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:	0.00		
System ID:	1103704		
User-Defined ID:			
Cross Reference Number:	233000A3.03		
Topic:	ILT-5019-11-001		
Num Field 1:	2015 NRC		
Num Field 2:			
Text Field:			
Comments:	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 <input type="checkbox"/> Other Exam Bank <input type="checkbox"/> ILT Exam Bank	
	Reference(s):	ARC-216 D-5	
	Learning Objective:	PLOT-5019-11	
	K/A System:	233000 Fuel Pool Cooling and Clean-up	Importance: RO / SRO 2.6/ 2.6
	K/A Statement:	A3.03 Ability to monitor automatic operations of the FUEL POOL COOLING AND CLEAN-UP including: System indicating lights and alarms	
	REQUIRED MATERIALS:	None	
	Notes and Comments:	None	

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

36

ID: 1103707

Points: 1.00

A hydraulic ATWS exists on Unit 2.

As power is reduced, a Rod Worth Minimizer (RWM) insert rod block occurs.

Based on the above conditions, control rods can be inserted by:

- A. placing the Rod Control switch (3A-S2) in the "IN" position
- B. venting the scram air header in accordance with T-214 "Isolating and Venting the Scram Air Header"
- C. placing the Emergency In/Notch Override switch (3A-S3) in the "EMERG ROD IN" position ONLY
- D. bypassing the RWM AND placing the Emergency In/Notch Override switch (3A-S3) in the "EMERG ROD IN" position

Answer: D

Answer Explanation		
Choice		Basis or Justification
Correct:	D	The RWM must be bypassed to allow the Emergency in switch to continuously insert the control rod.
Distractors:	A	An insert rod block exists. Normal rod movement with the rod control switch is prevented by the insert block. Plausible if candidate does not understand the relationship between the RWM and RMCS.
	B	Since a hydraulic ATWS exists, the scram air header is already depressurized. T-214 will have no effect. Plausible if the candidate does not understand that the scram air header would already be depressurized because of the hydraulic ATWS.
	C	An insert rod block exists. Rod movement with the Emergency In/Notch override switch is prevented without bypassing the RWM. Plausible if candidate does not understand the relationship between the RWM and RMCS.

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

Question 36 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:	1103707																																														
User-Defined ID:																																															
Cross Reference Number:	201002A4.02																																														
Topic:	ILT5062-3f-001																																														
Num Field 1:	2015 NRC																																														
Num Field 2:																																															
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Psychometrics																																															
Level of Knowledge	Difficulty	Time Allowance (minutes)	RO																																												
MEMORY			10CRF55.41(b)(6)																																												
Source Documentation																																															
Source:	New Exam item Modified Bank XILT Exam Bank		Previous NRC Exam Other Exam Bank																																												
Reference(s):	T-220, M-1-S-20																																														
Learning Objective:	PLOT-5062-3f																																														
K/A System:	201002 Reactor Manual Control System		Importance: RO / SRO 3.5/ 3.5																																												
K/A Statement:	A4.02 Ability to manually operate and/or monitor in the control room: Emergency in/notch override switch																																														
REQUIRED MATERIALS:	None																																														
Notes and Comments:	None																																														

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

37

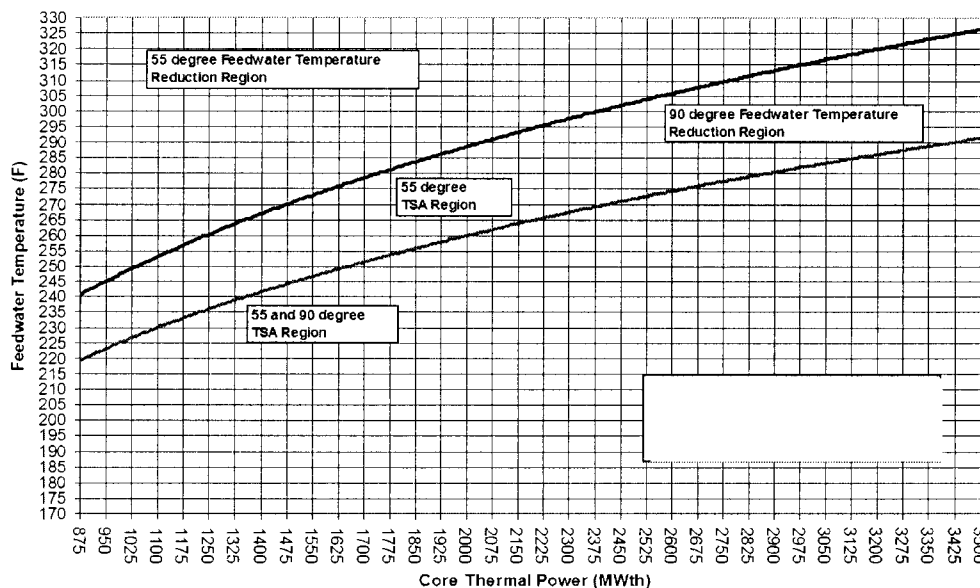
ID: 1103715

Points: 1.00

A loss of Feedwater heating has occurred on Unit 3. The following conditions exist:

- Reactor Power has been lowered to 3500 MWth per OT-104, "Positive Reactivity Insertion"
- Computer point NSS318 "Feedwater Temperature" is valid and reads 310 degrees F
- PMS major alarm "NSS316 "AO 6.7-3 FW Delta T" is NOT in alarm
- RE-41, "Installation/Verification of the 3D Monicore Thermal Operating Limits" indicates that the 55 degree F limit is in effect
- Figure 2 from OT-104 is below for reference

Figure 2
Feedwater Temperature Limits - Unit 3



Based on the above information, feedwater heating ____ (1) ____ symmetrical and operation ____ (2) ____ in the Technical Specification Action (TSA) region.

- A. (1) is
(2) is
- B. (1) is
(2) is not
- C. (1) is not
(2) is
- D. (1) is not
(2) is not

Answer: A

EXAMINATION ANSWER KEY

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Answer Explanation		
Choice		Basis or Justification
Correct:	A	OT-104 provides the guidance that if major alarm "NSS316 "AO 6.7-3 FW Delta T" from computer point NSS316 is not in alarm then feedwater heating is symmetrical. Plotting the point on the graph puts operation in the TSA region.
Distractors:	B	Plausible if the candidate does not plot the point correctly or does not understand the regions of the graph.
	C	Plausible if the candidate does not understand the meaning of the alarm.
	D	Plausible if the candidate does not understand the meaning of the alarm. Plausible if the candidate does not plot the point correctly or does not understand the regions of the graph.

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

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:	1103715		
User-Defined ID:			
Cross Reference Number:	259001 2.1.19		
Topic:	ILT-5006-9d-001		
Num Field 1:	2015 NRC		
Num Field 2:			
Text Field:			
Comments:	Psychometrics		
	Level of Knowledge	Difficulty	Time Allowance (minutes)
	HIGH		10CRF55.41(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):	OT-104	
	Learning Objective:	PLOT 5006-9d	
	K/A System:	259001 Reactor Feedwater System	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:	None	

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

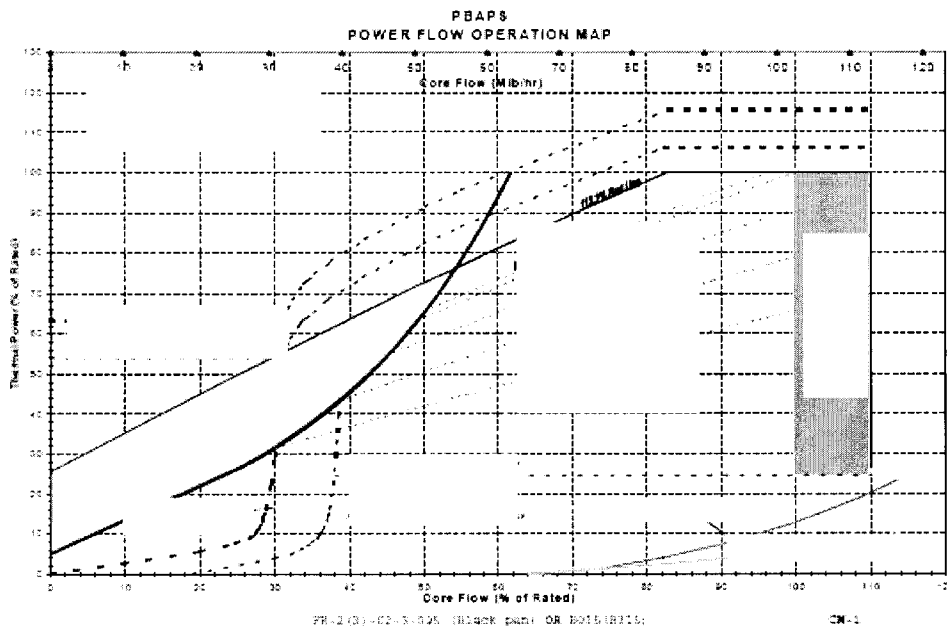
38

ID: 1103769

Points: 1.00

The following conditions exist:

- Due to an equipment malfunction the 2A Recirculation M/G set was "locked up" per SO 2D.7.B-2, "Recirculation MG Set Scoop Tube Lockup and Reset".
- A reactor scram has occurred
- Core flow is oscillating between 65% to 75%
- 2A Recirculation Pump M/G Set Drive Motor amps are oscillating between 250 to 300 amps
- The PBAPS Power-to-Flow Map is below for reference.
-



Based on the above conditions, what is the status of the 2A Recirculation Pump and what action is required per procedure SO 2D.7.B-2?

The "2A" Recirculation Pump (1) cavitating, and the operator shall (2) in accordance with SO 2D.7.B-2, "Recirculation MG Set Scoop Tube Lockup and Reset"

- A. (1) is
(2) trip the "2A" Recirc pump
- B. (1) is
(2) runback the "2A" Recirc pump locally
- C. (1) is not
(2) trip the "2A" Recirc pump
- D. (1) is not
(2) runback the "2A" Recirc pump locally

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

Answer: A

Answer Explanation		
Choice		Basis or Justification
Correct:	A	Core flow and M-G Set amperage oscillations are indications of cavitation. Plotting the position of the Power-to-Flow map would also put operation in the Recirc pump cavitation region. SO 2D.7.B-2 direct the operator to trip the Recirc pump following a scram.
Distractors:	B	Plausible if the candidate does not recall that SO 2D.7.B-2 directs that the operator trip the pump. There are steps in the procedure on when to locally reduce the speed of the M-G set but following a scram in not when that guidance would be used.
	C	Plausible if the candidate does not understand indications of cavitation or does not plot the operating point correctly on the Power-to-Flow map. Procedure SO 2D.7.B-2 requires that the locked up recirc pump be tripped following a reactor scram. Even if the Recirc pump is not cavitating the procedure requires that the pump must be tripped.
	D	Plausible if the candidate does not understand indications of cavitation or does not plot the operating point correctly on the Power-to-Flow map. Plausible if the candidate does not recall that SO 2D.7.B-2 directs that the operator trip the pump. There are steps in the procedure on when to locally reduce the speed of the M-G set but following a scram in not when that guidance would be used.

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

Question 38 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:	1103769																																														
User-Defined ID:																																															
Cross Reference Number:	202001K5.01																																														
Topic:	ILT-5002-4a-001																																														
Num Field 1:	2015 NRC																																														
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Psychometrics																																															
Level of Knowledge	Difficulty	Time Allowance (minutes)	RO																																												
HIGH			10CFR55.41(b)(7)																																												
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Learning Objective:	PLOT-5002-4a																																														
K/A System:	202001 Recirculation System		Importance: RO / SRO 2.7 / 2.8																																												
K/A Statement:	K5.01 - Knowledge of the operational implications of the following concepts as they apply to RECIRCULATION SYSTEM: Indication of pump cavitation																																														
REQUIRED MATERIALS:	None																																														
Notes and Comments:	None																																														

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

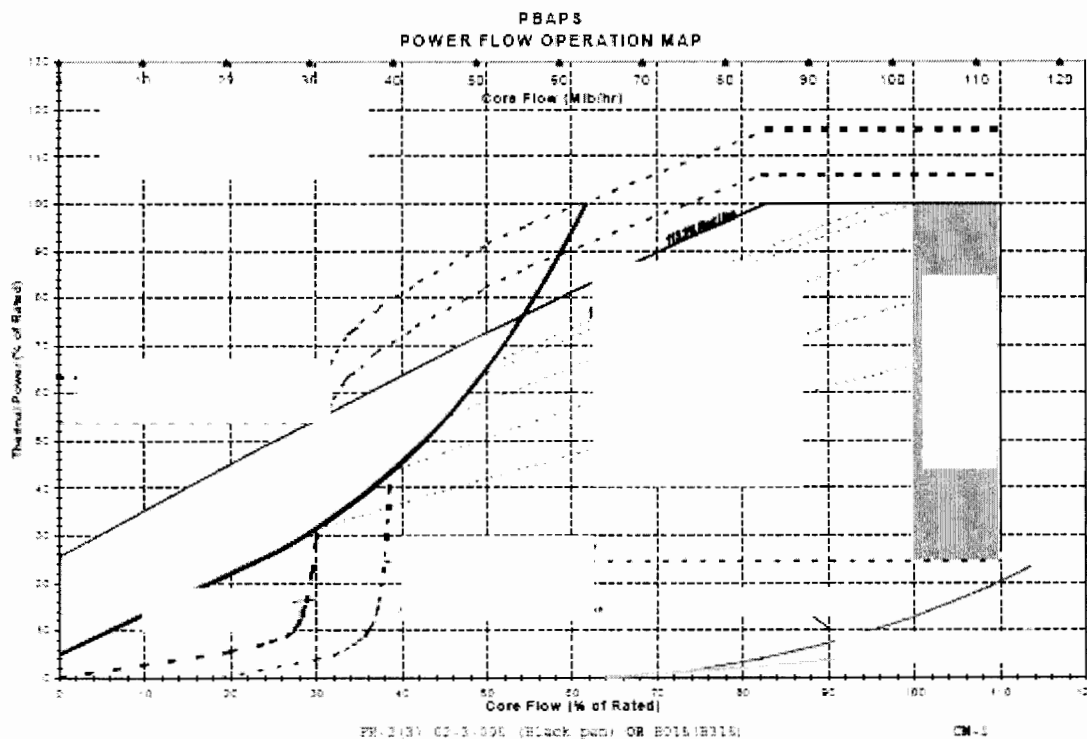
39

ID: 994128

Points: 1.00

Unit 2 was operating at 2800 MWt when the following transient occurred:

- The 'A' Recirc Pump tripped
- The 'B' Recirc Pump speed remains at 1200 RPM
- Power lowered to 1757 MWt
- APRMs are oscillating between 48% and 53% power in approximately 4 - 5 second random intervals
- Indicated Core Flow on FR-2-2-3-095 (Black Pen) is 52 Mlbm/hr
- Inactive Loop Flow on FI-2-2-3-092A is 5 Mlbm/hr
- GP-5-1, "PBAPS Power Flow Operation Map", is below for reference
-



The plant is operating in what region of the Power Flow Operation Map?

- A. Increased Core Flow Region
- B. Normal Operating Region
- C. Region 2
- D. Recirculation Pump Suction Cavitation Region

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

Answer: C

Answer Explanation		
Choice		Basis or Justification
Correct:	C	The candidate must subtract 2 times the inactive recirc loop flow from the active recirc loop flow ($52 - (2 \times 5) = 42$ lbm/hr); and with power at 50%, this plots in region 2 of the Power Flow Operations Map.
Distractors:	A	Plausible if the candidate does not correctly perform the loop flow calculation or plot correctly on the Power Flow Operations Map.
	B	Plausible if the candidate does not correctly perform the loop flow calculation or plot correctly on the Power Flow Operations Map.
	D	Plausible if the candidate does not correctly perform the loop flow calculation or plot correctly on the Power Flow Operations Map.

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

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:	994128																																														
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Psychometrics																																															
Level of Knowledge	Difficulty	Time Allowance (minutes)	RO																																												
HIGH			10CRF55.41(b)(5)																																												
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Reference(s):	OT-112, GP-5																																														
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K/A System:	295001 Partial of Complete Loss of Forced Core Flow Circulation		Importance: RO/SRO 3.3/ 3.5																																												
K/A Statement:	AK1.02 - Knowledge of the operational implications of the following concepts as they relate to PARTIAL OF COMPLETE LOSS OF FORCED CORE FLOW CIRCULATION: Power/flow distribution																																														
REQUIRED MATERIALS:	None																																														
Notes and Comments:	None																																														

EXAMINATION ANSWER KEY

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40

ID: 993715

Points: 1.00

Unit 2 is operating at 100% power when a sustained loss of Reactor Building Closed Cooling Water occurs.

In accordance with ON-113, Loss of RBCCW, the recirculation pumps _____.

- A. must be tripped immediately.
- B. must be tripped when Recirc Pump seal temperature exceeds 180 degrees F.
- C. may remain running provided CRD seal purge flow is maintained.
- D. may remain running provided pump temperatures remain within the procedural limits.

Answer: D

Answer Explanation		
Choice		Basis or Justification
Correct:	D	ON-113 allows the recirc pumps to remain in-service as long as temperatures are below the limits for Pump seals and Pump motor bearings.
Distractors:	A	There is no requirement to immediately trip the recirc pumps on a loss of RBCCW. Plausible if the candidate confusing the action to immediately trip the RWCU pumps with the Recirc pumps per ON-113.
	B	ON-113 directs that speed be lowered on the recirc pumps for high seal temperature. Plausible if the candidate does not understand the ON-113 guidance for high seal temperatures.
	C	Plausible if the candidate confuses the note in ON-113 about maintaining CRD in service with a guidance that allows the Recirc pump to remain in-service as long as CRD is in service.

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2015 NRC Reactor Operator Exam - Revision 0

Question 40 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:	993715		
User-Defined ID:	ILT-1550-18B-001		
Cross Reference Number:	295018 AK1.01		
Topic:	ILT-1550-18b-001 ON-113 RCS action basis		
Num Field 1:	4953		
Num Field 2:	N/A		
Text Field:	B		
Comments:	Psychometrics		
	Level of Knowledge	Difficulty	Time Allowance (minutes)
	RO		
	MEMORY		10CRF55.41(b)(7)
	Source Documentation		
	Source:	New Exam item Modified Bank X ILT Exam Bank	Previous NRC Exam Other Exam Bank
	Reference(s):	ON-113	
	Learning Objective:	PLOT-1550-18b	
	K/A System:	295018 Partial or Complete Loss of Component Cooling Water	Importance: RO / SRO 3.5/ 3.6
	K/A Statement:	AK1.01 - Knowledge of the operational implications of the following concepts as they apply to PARTIAL OR COMPLETE LOSS OF COMPONENT COOLING WATER: Effects on components/system operations	
	REQUIRED MATERIALS:	None	
	Notes and Comments:	None	

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

41

ID: 1103783

Points: 1.00

An ATWS has occurred on Unit 2. T-117 "Level/Power Control" is in progress with the following conditions:

- Reactor Power is 15%
- Level has been lowered to -70 inches using T-240 "Terminate and Prevention of Injection Into the RPV"
- The CRS has redirected the PRO to lower level in accordance with T-240 Attachment 1 Figure 2 criteria (reproduced below)

T-240-2, Attachment 1, FIGURE 2

IF T-117 directed that RPV level be lowered to protect Primary Containment, THEN restore RPV injection in accordance with T-117 when ANY of the following conditions exist:

- RPV level reaches -172 inches
OR
- Reactor power drops below 4%
OR
- All SRVs remain closed and Drywell pressure drops below 2 psig"

What is the basis for lowering Reactor level until Figure 2 criteria is met?

- A. Utilize steam cooling to assure adequate core cooling and prevent exceeding 1800 degrees F clad temperature.
- B. Improve Boron effectiveness in the core by lowering neutron flux into the lower core region.
- C. Lower driving head which reduces natural circulation and core flow to void the core and lower core power.
- D. To further reduce core inlet subcooling and thereby reduce the potential for Thermal Hydraulic Instability.

Answer: C

Answer Explanation		
Answer Key		
Choice		Basis or Justification
Correct:	C	Per T-117 Bases, the reason for lowering Reactor level until Figure 2 criteria is met is to lower driving head, which reduces natural circulation and core flow to void the core and lower core power.
Distractors:	A	Core submergence here ensures ACC. Steam Cooling later if level drops below -172 inches.

EXAMINATION ANSWER KEY

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	B	Boron effectiveness is improved later in T-117 when level is restored after HSBW is injected. Not the reason to lower level here.
	D	With RPV level already less than -60 inches, the feedwater spargers are already uncovered. Per T-117 bases, lowering RPV level even more has no further effect on subcooling.

Question 41 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:	1103783																																												
User-Defined ID:																																													
Cross Reference Number:	295031EK1.02																																												
Topic:	ILT-2117-3-002																																												
Num Field 1:	2015 NRC																																												
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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>10CFR55.41(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 Item <input type="checkbox"/> Other Exam Bank: <input checked="" type="checkbox"/> ILT Exam Bank </td></tr> <tr> <td>Reference(s):</td><td colspan="3">T-117 and Bases; T-240 and Bases</td></tr> <tr> <td>Learning Objective:</td><td colspan="3">PLOT-PBIG-2117-3</td></tr> <tr> <td>K/A System:</td><td>295031 – Reactor Low Water Level</td><td colspan="2">Importance: RO / SRO 3.8 / 4.1</td></tr> <tr> <td colspan="4">K/A Statement: EK1.02 – Knowledge of the operational implications of the following concepts as they apply to REACTOR LOW WATER LEVEL: Natural circulation</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			10CFR55.41(b)(10)	Source Documentation				Source:	<input type="checkbox"/> New Exam Item <input type="checkbox"/> Previous NRC Exam: <input type="checkbox"/> Modified Bank Item <input type="checkbox"/> Other Exam Bank: <input checked="" type="checkbox"/> ILT Exam Bank			Reference(s):	T-117 and Bases; T-240 and Bases			Learning Objective:	PLOT-PBIG-2117-3			K/A System:	295031 – Reactor Low Water Level	Importance: RO / SRO 3.8 / 4.1		K/A Statement: EK1.02 – Knowledge of the operational implications of the following concepts as they apply to REACTOR LOW WATER LEVEL: Natural circulation				REQUIRED MATERIALS:	None			Notes and Comments:	None		
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REQUIRED MATERIALS:	None																																												
Notes and Comments:	None																																												

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

42

ID: 993788

Points: 1.00

- An ATWS is in progress with reactor power at 25%.
- T-117, "Level/Power Control", directs the operator to intentionally lower RPV water level to control reactor power.

Which one of the following statements best describes the purpose of intentionally lowering RPV Water level to below -60 inches per T-117 bases?

Lowering reactor level _____.

- A. raises fuel temperature which will add negative reactivity through the Doppler Coefficient.
- B. ensures all injection from RHR is into the steam space providing effective heating of relatively cold incoming torus water to minimize the potential for thermal hydraulic instabilities.
- C. places the feedwater spargers in the steam space providing effective heating of relatively cold incoming feedwater to minimize the potential for thermal hydraulic instabilities.
- D. ensures a high boron concentration in the water. This will allow the reactor to shutdown sooner.

Answer: C

Answer Explanation		
Choice		Basis or Justification
Correct:	C	T-117 bases states that placing the feedwater spargers in the steam space provides effective heating of relatively cold incoming feedwater to minimize the potential for thermal hydraulic instabilities.
Distractors:	A	Plausible if the candidate does not under stand that lowering the level to -60 inches does not affect fuel temperature. If fuel temperature was affected then it would cause negative reactivity to be added to the core.
	B	Plausible if the candidate does not understand the where RHR injects into the core region. With level at -60 inches the RHR injection follow would still be directed into the jet pumps through the jet pump nozzles.
	D	Plausible if the candidate does not understand how boron is used to shutdown the core and where SLC injects into the core. Boron injects into the core at the lower head region. Lowering RPV level to -60 inches does not affect the concentration.

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

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:	993788		
User-Defined ID:	ILT-PBIG2117-5A-002		
Cross Reference Number:	295037 EK 102		
Topic:	ILT-2117-5-002		
Num Field 1:	2015 NRC		
Num Field 2:	N/A		
Text Field:	B		
Comments:	Psychometrics		
	Level of Knowledge	Difficulty	Time Allowance (minutes)
	MEMORY		10CRF55.41(b)(10)
	Source Documentation		
	Source:	New Exam item Modified Bank XILT Exam Bank	Previous NRC Exam Other Exam Bank
	Reference(s):	PBIG 2117; T-117 and Bases	
	Learning Objective:	PLOT 2117-5	
	K/A System:	295037 SCRAM Condition Present and Reactor Power Above APRM Downscale or Unknown	Importance: RO / SRO 4.0/ 4.2
	K/A Statement:	EK2.09 - Knowledge of the interrelations between SCRAM CONDITION PRESENT AND REACTOR POWER ABOVE APRM DOWNSCALE OR UNKNOWN and the following: Reactor water level	
	REQUIRED MATERIALS:	None	
	Notes and Comments:	None	

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

43

ID: 1103904

Points: 1.00

Unit 3 was operating at 35% Reactor power when a feedwater transient caused Reactor water level to rise to + 48 inches.

Which of the following describes the position of the Main Turbine Bleeder Trip valves and the impact on feedwater temperature?

The Bleeder Trip valves will be ____ (1) ____ and feedwater temperature will ____ (2) ____.

- A. (1) open
(2) lower
- B. (1) open
(2) remain the same
- C. (1) closed
(2) lower
- D. (1) closed
(2) remain the same

Answer: C

Answer Explanation		
Choice		Basis or Justification
Correct:	C	The turbine trip will cause the bleeder trip valves to close to isolate the steam left in the feedwater heaters for the turbine to prevent an overspeed trip of the turbine. The loss of feedwater heating will cause a drop in feedwater temperature.
Distractors:	A	Plausible if the the candidate does not recognize that a RPV level of 48 inches causes a turbine trip or if the candidate does not understand the purpose of the Bleeder Trip valves.
	B	Plausible if the the candidate does not recognize that a RPV level of 48 inches causes a turbine trip or if the candidate does not understand the purpose of the Bleeder Trip valves.
	D	Plausible if the the candidate does not recognize that a RPV level of 48 inches causes a turbine trip or if the candidate does not understand the purpose of the Bleeder Trip valves.

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

Question 43 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:	1103904																																														
User-Defined ID:																																															
Cross Reference Number:	295005AK2.02																																														
Topic:	ILT-5001B-6c-001																																														
Num Field 1:	2015 NRC																																														
Num Field 2:																																															
Text Field:																																															
Comments:	<table border="1"> <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> <tr> <td>HIGH</td> <td></td> <td></td> <td>10CRF55.41(b)(5)</td> </tr> <tr> <th colspan="4">Source Documentation</th> </tr> <tr> <td>Source:</td> <td colspan="2">New Exam item XModified Bank ILT Exam Bank</td> <td>Previous NRC Exam Other Exam Bank</td> </tr> <tr> <td>Reference(s):</td> <td colspan="3">PLOT-5001B, PLOT-5001E</td> </tr> <tr> <td>Learning Objective:</td> <td colspan="3">PLOT-5001B-6c</td> </tr> <tr> <td>K/A System:</td> <td colspan="2">295005 Main Turbine Generator Trip</td> <td>Importance: RO / SRO 2.9/ 3.0</td> </tr> <tr> <td>K/A Statement:</td> <td colspan="3">AK2.02 - Knowledge of the interrelations between MAIN TURBINE GENERATOR TRIP and the following: Feedwater temperature</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> </table>			Psychometrics				Level of Knowledge	Difficulty	Time Allowance (minutes)	RO	HIGH			10CRF55.41(b)(5)	Source Documentation				Source:	New Exam item X Modified Bank ILT Exam Bank		Previous NRC Exam Other Exam Bank	Reference(s):	PLOT-5001B, PLOT-5001E			Learning Objective:	PLOT-5001B-6c			K/A System:	295005 Main Turbine Generator Trip		Importance: RO / SRO 2.9/ 3.0	K/A Statement:	AK2.02 - Knowledge of the interrelations between MAIN TURBINE GENERATOR TRIP and the following: Feedwater temperature			REQUIRED MATERIALS:	None			Notes and Comments:	None		
Psychometrics																																															
Level of Knowledge	Difficulty	Time Allowance (minutes)	RO																																												
HIGH			10CRF55.41(b)(5)																																												
Source Documentation																																															
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Reference(s):	PLOT-5001B, PLOT-5001E																																														
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K/A System:	295005 Main Turbine Generator Trip		Importance: RO / SRO 2.9/ 3.0																																												
K/A Statement:	AK2.02 - Knowledge of the interrelations between MAIN TURBINE GENERATOR TRIP and the following: Feedwater temperature																																														
REQUIRED MATERIALS:	None																																														
Notes and Comments:	None																																														

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

44

ID: 1118708

Points: 1.00

The following conditions exist on Unit 2:

- Drywell pressure is 4 psig and rising
- Torus level is 13 feet and lowering

For the above conditions, which of the following choices can be used to improve Primary Containment Conditions?

- A. Raise Torus level using the Torus Water Filter pump IAW SO 14A.1.A-2, "Torus Water Cleanup and Level Control".
- B. Raise Torus level using the High Pressure Service Water system IAW T-231, "HPSW Injection into the Torus".
- C. Lower Drywell pressure using the 2 inch Drywell Vent IAW T-200B-2, "Primary Containment Venting Via the 2 in. Drywell Vent to SBT".
- D. Lower Drywell pressure by starting the third Drywell Chiller IAW RRC 44A.1-2, "Maximizing Drywell Cooling".

Answer: B

Answer Explanation		
Choice		Basis or Justification
Correct:	B	With high Drywell pressure the other three choices are not available due to PCIS isolations. Using HPSW will allow for Torus makeup and can be performed irrespective of any PCIS isolation signal.
Distractors:	A	Using the Torus Water Filter pump is a method to letdown water from the Torus. The direction to makeup and letdown Torus water is in the same procedure SO 14A.1.A-2, "TORUS WATER CLEANUP AND LEVEL CONTROL". Plausible if the candidate does not recall the the purpose of the Torus Water Filter pump or confuses the letdown and makeup section of the procedure.
	C	The 2 inch drywell vents would be used under normal conditions to lower Drywell pressure. The 2 inch vents will not be available due to the isolation signal. Plausible if the candidate does not recall the isolation signal or believes that bypassing the isolation signal is allowed with Drywell pressure at 4 psig. Drywell pressure must be 60 psig to align the vent flow path.
	D	Drywell ventilation will have tripped with the 2 psig signal. The candidate can start the third chiller but it will have no affect on Drywell pressure because all of the Drywell fans are tripped. Plausible if the candidate does not recall the Drywell fans trip at 2 psig Drywell pressure.

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

Question 44 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:	1118708																																														
User-Defined ID:																																															
Cross Reference Number:	295024EK2.09																																														
Topic:	ILT-5007-9k2-002																																														
Num Field 1:	2015 NRC																																														
Num Field 2:																																															
Text Field:																																															
Comments:	<table border="1"> <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> <tr> <td>HIGH</td> <td></td> <td></td> <td>10CRF55.41(b)(14)</td> </tr> <tr> <th colspan="4">Source Documentation</th> </tr> <tr> <td>Source:</td> <td colspan="2">XNew Exam item Modified Bank ILT Exam Bank</td> <td>Previous NRC Exam Other Exam Bank</td> </tr> <tr> <td>Reference(s):</td> <td colspan="3">T-102, SO 14A.1.A</td> </tr> <tr> <td>Learning Objective:</td> <td colspan="3">PLOT-5007-9k2-001</td> </tr> <tr> <td>K/A System:</td> <td>295024 High Drywell Pressure</td> <td colspan="2">Importance: RO / SRO 2.9/ 3.1</td> </tr> <tr> <td>K/A Statement:</td> <td colspan="3">EK2.09 - Knowledge of the interrelations between HIGH DRYWELL PRESSURE and the following: Suppression pool makeup</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> </table>			Psychometrics				Level of Knowledge	Difficulty	Time Allowance (minutes)	RO	HIGH			10CRF55.41(b)(14)	Source Documentation				Source:	XNew Exam item Modified Bank ILT Exam Bank		Previous NRC Exam Other Exam Bank	Reference(s):	T-102, SO 14A.1.A			Learning Objective:	PLOT-5007-9k2-001			K/A System:	295024 High Drywell Pressure	Importance: RO / SRO 2.9/ 3.1		K/A Statement:	EK2.09 - Knowledge of the interrelations between HIGH DRYWELL PRESSURE and the following: Suppression pool makeup			REQUIRED MATERIALS:	None			Notes and Comments:	None		
Psychometrics																																															
Level of Knowledge	Difficulty	Time Allowance (minutes)	RO																																												
HIGH			10CRF55.41(b)(14)																																												
Source Documentation																																															
Source:	XNew Exam item Modified Bank ILT Exam Bank		Previous NRC Exam Other Exam Bank																																												
Reference(s):	T-102, SO 14A.1.A																																														
Learning Objective:	PLOT-5007-9k2-001																																														
K/A System:	295024 High Drywell Pressure	Importance: RO / SRO 2.9/ 3.1																																													
K/A Statement:	EK2.09 - Knowledge of the interrelations between HIGH DRYWELL PRESSURE and the following: Suppression pool makeup																																														
REQUIRED MATERIALS:	None																																														
Notes and Comments:	None																																														

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

45

ID: 994506

Points: 1.00

Unit 2 is operating at 100% power.

Which one of the following identifies the Reactor Water Cleanup (RWCU) System and PCIS Isolation logic response to the loss of Panel 20Y33?

A PCIS ____ (1) ____ Group II Isolation will be received and a ____ (2) ____ RWCU isolation signal will be received.

- A. (1) Outboard
(2) Full
- B. (1) Inboard
(2) Half
- C. (1) Inboard
(2) Full
- D. (1) Outboard
(2) Half

Answer: C

Answer Explanation		
Choice		Basis or Justification
Correct:	C	Although the loss of 20Y33 causes an INBOARD group II isolation, RWCU will receive a full isolation due to a logic power supply intertie.
Distractors:	A	Plausible if the candidate does not recall that Y 33 provides power to the Inboard logic not the outboard logic.
	B	Plausible if the candidate does not recall how a loss of Y-33 affects RWCU.
	D	Plausible if the candidate does not recall that Y-33 provides power to the Inboard logic not the outboard logic. Plausible if the candidate does not recall how a loss of Y-33 affects RWCU.

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

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:	1.00																																																						
System ID:	994506																																																						
User-Defined ID:	ILT-5007G-5A-003																																																						
Cross Reference Number:	295003AK3.06																																																						
Topic:	ILT-5007G-6a-003																																																						
Num Field 1:	2015 NRC																																																						
Num Field 2:	N/A																																																						
Text Field:	A																																																						
Comments:	<table border="1"> <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> <tr> <td>HIGH</td> <td></td> <td></td> <td>10CRF55.41(b)(7)</td> </tr> <tr> <th colspan="4">Source Documentation</th> </tr> <tr> <td>Source:</td> <td colspan="2">New Exam item</td> <td>Previous NRC Exam</td> </tr> <tr> <td></td> <td colspan="2">Modified Bank</td> <td>Other Exam Bank</td> </tr> <tr> <td></td> <td colspan="3">XILT Exam Bank</td> </tr> <tr> <td>Reference(s):</td> <td colspan="3">PLOT 5007G, GP-8C</td> </tr> <tr> <td>Learning Objective:</td> <td colspan="3">PLOT-5007G-</td> </tr> <tr> <td>K/A System:</td> <td colspan="2">295003 Partial of Complete Loss of A.C.Power</td> <td>Importance: RO / SRO 3.7/ 3.7</td> </tr> <tr> <td>K/A Statement:</td> <td colspan="3">AK3.06 - Knowledge of the reason 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 colspan="3">None</td> </tr> <tr> <td>Notes and Comments:</td> <td colspan="3">None</td> </tr> </table>			Psychometrics				Level of Knowledge	Difficulty	Time Allowance (minutes)	RO	HIGH			10CRF55.41(b)(7)	Source Documentation				Source:	New Exam item		Previous NRC Exam		Modified Bank		Other Exam Bank		XILT Exam Bank			Reference(s):	PLOT 5007G, GP-8C			Learning Objective:	PLOT-5007G-			K/A System:	295003 Partial of Complete Loss of A.C.Power		Importance: RO / SRO 3.7/ 3.7	K/A Statement:	AK3.06 - Knowledge of the reason for the following responses as they apply to PARTIAL OR COMPLETE LOSS OF A.C. POWER: Containment isolation			REQUIRED MATERIALS:	None			Notes and Comments:	None		
Psychometrics																																																							
Level of Knowledge	Difficulty	Time Allowance (minutes)	RO																																																				
HIGH			10CRF55.41(b)(7)																																																				
Source Documentation																																																							
Source:	New Exam item		Previous NRC Exam																																																				
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Reference(s):	PLOT 5007G, GP-8C																																																						
Learning Objective:	PLOT-5007G-																																																						
K/A System:	295003 Partial of Complete Loss of A.C.Power		Importance: RO / SRO 3.7/ 3.7																																																				
K/A Statement:	AK3.06 - Knowledge of the reason for the following responses as they apply to PARTIAL OR COMPLETE LOSS OF A.C. POWER: Containment isolation																																																						
REQUIRED MATERIALS:	None																																																						
Notes and Comments:	None																																																						

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

46

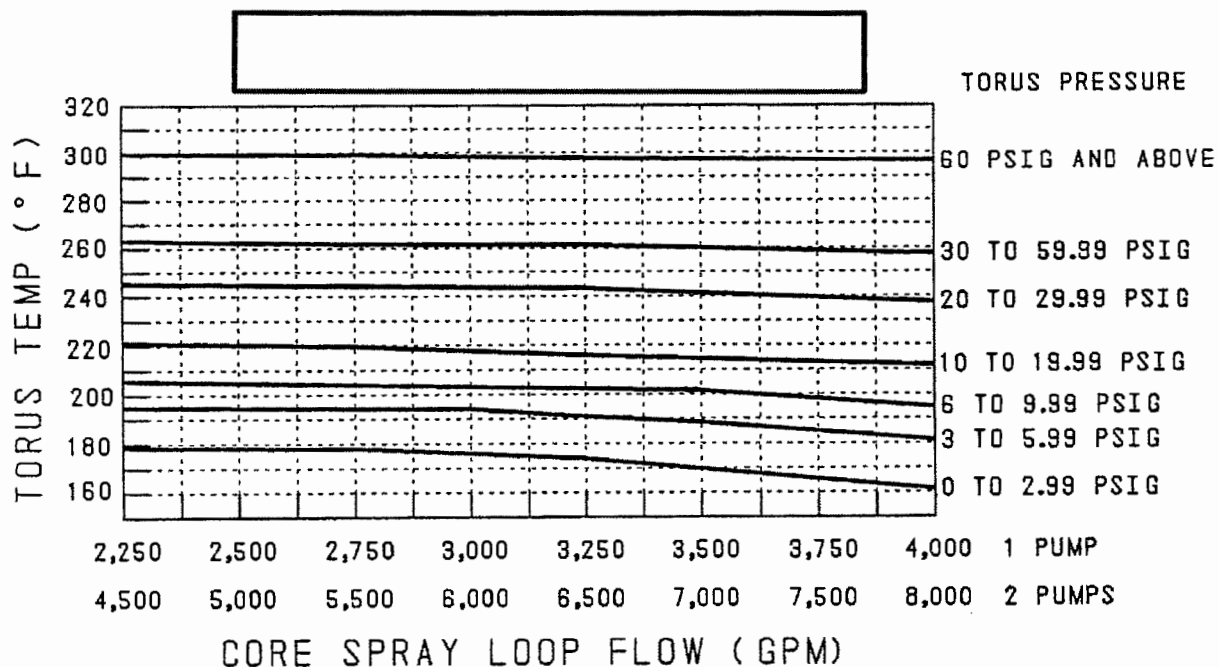
ID: 994371

Points: 1.00

Unit 3 was operating at 100% power when a plant transient resulted in the following conditions:

- The Reactor is scrammed; all rods are inserted
- Reactor pressure is 300 psig and lowering
- Torus temperature is 185°F
- Torus pressure is 2 psig
- Torus level is 11.5 feet
- The "A" Core Spray pump is the only pump available for injection
- Reactor water level -200 inches and lowering

The Core Spray System Pump NPSH curves are provided below for reference.



Based on the above conditions, the "A" Core Spray pump _____.

- A. CAN be used per T-111, "Level Restoration", the NPSH and Vortex Limits can be exceeded.
- B. CAN be used per T-111, "Level Restoration", the NPSH and Vortex Limits will NOT be exceeded.
- C. CANNOT be used per T-111, "Level Restoration", the Vortex Limit has been exceeded.
- D. CANNOT be used per T-111, "Level Restoration", the NPSH Limit has been exceeded.

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

Answer: A

Answer Explanation		
Choice		Basis or Justification
Correct:	A	The given conditions result in entry into T-111, "Level Restoration". Step LR-7 of T-111 allows operation of Core Spray pump "A" even if the NPSH and/or Vortex limit(s) have been exceeded. The Core Spray pump would start to inject at an RPV pressure of ≤ 330 psig.
Distractors:	B	The NPSH limit will be exceeded. Plausible if the candidate does not plot the graph correctly.
	C	The Vortex limit (10.5 feet in the torus) has not been exceeded. Plausible if the candidate does not recall the vortex limit.
	D	Although the NPSH limit has been exceeded, the "A" Core Spray pump can be placed in service as directed by Step LR-7 of T-111. Plausible if the candidate does not recall the requirement to inject to maintain ACC.

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

Question 46 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:	994371		
User-Defined ID:	ILT-5014-6C-001		
Cross Reference Number:	295030EK3.07		
Topic:	ILT-5014-7c-001		
Num Field 1:	2015 NRC		
Num Field 2:	0.00		
Text Field:	ILT05-1 NRC Exam #32		
Comments:	Psychometrics		
	Level of Knowledge	Difficulty	Time Allowance (minutes)
	HIGH		10CRF55.41(b)(10)
	Source Documentation		
	Source:	New Exam item Modified Bank XILT Exam Bank	Previous NRC Exam Other Exam Bank
	Reference(s):	T-102, T-111	
	Learning Objective:	PLOT-5014-7c	
	K/A System:	295030 Low Suppression Pool Water Level	Importance: RO / SRO 3.5/ 3.8
	K/A Statement:	EK3.07 - Knowledge of the reason for the following responses as they apply to LOW SUPPRESSION POOL WATER LEVEL: NPSH considerations for ECCS pumps	
	REQUIRED MATERIALS:	None	
	Notes and Comments:	None	

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

47

ID: 993559

Points: 1.00

- Both units are at 100% power with all systems in a normal full power lineup.
- A Loss of Off-site Power occurs causing the following on both units:
 - a scram,
 - a Group I isolation,
 - a loss of power to the Auxiliary Buses.

For the above conditions, which of the statements below describes the response of the Instrument Air System on both units?

- A. Both units will experience a complete loss of Instrument Air compressors.
- B. The Backup Air Compressors can not be started for at least 60 seconds after the Loss of Offsite Power.
- C. The A, B, and C Air Compressors will maintain Instrument Air Header pressure at a normal value during this event.
- D. The 'B' Instrument Air Headers on both units will be maintained by restarting the Backup Instrument Air Compressors.

Answer: D

Answer Explanation		
Choice		Basis or Justification
Correct:	D	A Loss of Off-site Power (LOOP) with loss of the 13 KV Auxiliary Busses will cause all three normal (A, B, C) air compressors to lose power. The Backup Air Compressor is supplied from emergency power and should supply the B Instrument Air header after AO-8(9)0250D opens due to both A and B instrument Air receivers pressure lowering as long as it has cooling water.
Distractors:	A	Incorrect. The Backup Air Compressor is supplied from emergency power and should supply the B Instrument Air header after AO-8(9)0250D opens due to both A and B instrument Air receivers pressure lowering as long as it has cooling water.
	B	Incorrect. The Backup Air Compressor is only locked out for the first 60 seconds after a LOCA signal. For the conditions listed here, there is no LOCA signal present.
	C	Incorrect. A Loss of Off-site Power (LOOP) with loss of the 13 KV Auxiliary Busses will cause all three normal (A, B, C) air compressors to lose power.

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

Question 47 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:	993559		
User-Defined ID:	ILT-5036-4A-002		
Cross Reference Number:	300000K4.01		
Topic:	ILT-5036-4a-002 LOOP effect on IA		
Num Field 1:	NA		
Num Field 2:	NA		
Text Field:	A		
Comments:	Psychometrics		
	Level of Knowledge	Difficulty	Time Allowance (minutes)
	MEMORY		
	Source Documentation		
	Source:	New Exam item Modified Bank XILT Exam Bank	Previous NRC Exam Other Exam Bank
	Reference(s):	ON-119	
	Learning Objective:	PLOT-5036-5a	
	K/A System:	300000 Instrument Air	Importance: RO / SRO 3.5/ 3.4
	K/A Statement:	AK3.02 - Knowledge of the reasons for the following responses as they apply to PARTIAL OR COMPLETE LOSS OF INSTRUMENT AIR SYSTEM: Standby air compressor operation	
	REQUIRED MATERIALS:	None	
	Notes and Comments:	None	

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

48

ID: 1118607

Points: 1.00

A DBA LOCA has occurred on Unit 2.

The following conditions exist:

- All four Emergency Diesel Generators (EDG) have started and are carrying their respective busses. EDG loading is as follows:
 - E-1 - 3000 KW
 - E-2 - 2000 KW
 - E-3 - 2300 KW
 - E-4 - 3000 KW
- All RHR Pumps are injecting into the RPV
- Torus temperature is 120 degrees F and rising
- TRIPs direct that Torus Cooling be placed in service

Based on the above conditions, in order to maximize Torus Cooling:

- A. Place the 'B' HPSW Pump in service supplying the 'B' RHR heat exchanger ONLY.
- B. Place the 'C' HPSW Pump in service supplying the 'C' RHR heat exchanger ONLY.
- C. Place the 'B' HPSW Pump in service supplying the 'B' RHR heat exchanger AND the 'C' HPSW Pump in service supplying the 'C' RHR heat exchanger.
- D. Loading on the E-2 EDG must be reduced to 1700 KW.

Answer: C

Answer Explanation		
Choice		Basis or Justification
Correct:	C	The maximum allowed Emergency Diesel Generator (EDG) loading is 3100 KW. A HPSW Pump load is 750 KW. The loading on the E-2 and E-3 EDGs is low enough to apply HPSW to the RHR heat exchangers without adjusting EDG load.
Distractors:	A	The maximum allowed Emergency Diesel Generator (EDG) loading is 3100 KW. Loading is acceptable to start a HPSW pump without adjusting load. Plausible if the candidate doesn't recall the loading requirements for a HPSW pump.
	B	The maximum allowed Emergency Diesel Generator (EDG) loading is 3100 KW. A HPSW Pump load is 750 KW. The loading on the E-2 and E-3 Emergency Diesel Generators (EDGs) is low enough to apply HPSW to the RHR heat exchangers without adjusting EDG load.
	D	The maximum allowed Emergency Diesel Generator (EDG) loading is 3100 KW. A HPSW Pump load is 750 KW. The loading on the E-2 and E-3 Emergency Diesel Generators (EDGs) is low enough to apply HPSW to the RHR heat exchangers without adjusting EDG load.

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

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:	1118607																																														
User-Defined ID:																																															
Cross Reference Number:	295026 EA1.01																																														
Topic:	ILT-5010-5h-001																																														
Num Field 1:	2015 NRC																																														
Num Field 2:																																															
Text Field:																																															
Comments:	<table border="1"> <tr> <th colspan="4">Psychometrics</th> </tr> <tr> <td>Level of Knowledge</td> <td>Difficulty</td> <td>Time Allowance (minutes)</td> <td>RO</td> </tr> <tr> <td>HIGH</td> <td></td> <td></td> <td>10CRF55.41(b)(7)</td> </tr> <tr> <th colspan="4">Source Documentation</th> </tr> <tr> <td>Source:</td> <td colspan="2">XNew Exam item Modified Bank ILT Exam Bank</td> <td>Previous NRC Exam Other Exam Bank</td> </tr> <tr> <td>Reference(s):</td> <td colspan="3">PLOT - 5010. RRC 10.1-2</td> </tr> <tr> <td>Learning Objective:</td> <td colspan="3">PLOT - 5010-5h</td> </tr> <tr> <td>K/A System:</td> <td colspan="2">259026 Suppression Pool High Water Temp</td> <td>Importance: RO / SRO 4.1/ 4.1</td> </tr> <tr> <td>K/A Statement:</td> <td colspan="3">EA1.01 - Ability to operate and/or monitor the following as they apply to SUPPRESSION POOL HIGH WATER TEMPERATURE: Suppression pool cooling</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> </table>			Psychometrics				Level of Knowledge	Difficulty	Time Allowance (minutes)	RO	HIGH			10CRF55.41(b)(7)	Source Documentation				Source:	XNew Exam item Modified Bank ILT Exam Bank		Previous NRC Exam Other Exam Bank	Reference(s):	PLOT - 5010. RRC 10.1-2			Learning Objective:	PLOT - 5010-5h			K/A System:	259026 Suppression Pool High Water Temp		Importance: RO / SRO 4.1/ 4.1	K/A Statement:	EA1.01 - Ability to operate and/or monitor the following as they apply to SUPPRESSION POOL HIGH WATER TEMPERATURE: Suppression pool cooling			REQUIRED MATERIALS:	None			Notes and Comments:	None		
Psychometrics																																															
Level of Knowledge	Difficulty	Time Allowance (minutes)	RO																																												
HIGH			10CRF55.41(b)(7)																																												
Source Documentation																																															
Source:	XNew Exam item Modified Bank ILT Exam Bank		Previous NRC Exam Other Exam Bank																																												
Reference(s):	PLOT - 5010. RRC 10.1-2																																														
Learning Objective:	PLOT - 5010-5h																																														
K/A System:	259026 Suppression Pool High Water Temp		Importance: RO / SRO 4.1/ 4.1																																												
K/A Statement:	EA1.01 - Ability to operate and/or monitor the following as they apply to SUPPRESSION POOL HIGH WATER TEMPERATURE: Suppression pool cooling																																														
REQUIRED MATERIALS:	None																																														
Notes and Comments:	None																																														

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

49

ID: 994079

Points: 1.00

The following conditions exist:

- Unit 2 reactor has scrammed and T-102 "Primary Containment Control" has been entered
- Due to the inability to spray, T-112 "Emergency Blowdown" has been entered
- Only one SRV can be opened
- Torus level is 16 feet and rising
- Drywell pressure is 13 psig and rising
- Drywell temperature is 285°F and rising
- The Control Room Supervisor has directed the use of HPCI in the CST to CST mode to depressurize the RPV

Based on the above conditions, which of the following procedures is required to perform this direction?

- A. RRC 23.1-2, "HPCI System Operation during a Plant Event" ONLY
- B. RRC 23.1-2, "HPCI System Operation during a Plant Event" and T-226, "Defeating HPCI High Torus Level Suction Transfer"
- C. T-250, "RPV Pressure Control using HPCI"
- D. T-226, "Defeating HPCI High Torus Level Suction Transfer" ONLY

Answer: C

Answer Explanation		
Choice		Basis or Justification
Correct:	C	In order to use HPCI in the CST-CST mode with an initiation signal present, the initiation signal must be bypassed using T-250. T-250 also removes the Torus high level swap allowing CST-CST operation.
Distractors:	A	The RRC will not work because DW press > 2 psig. Plausible if the candidate does not recall that HPCI can not be operated in the CST-CST mode above 2 psig.
	B	The RRC will not work because DW press > 2 psig. Plausible if the candidate does not recall that HPCI can not be operated in the CST-CST mode above 2 psig. Plausible if the candidate does not recall the high Torus level swap condition for HPCI.
	D	T-226 will not allow HPCI to be operated in the CST-CST mode it only will bypass a high torus level condition. Plausible if the candidate does not recall the high Torus level swap condition for HPCI.

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

Question 49 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:	994079																																														
User-Defined ID:	ILT-5023-1C-001																																														
Cross Reference Number:	206000K1.01																																														
Topic:	ILT-5023-5c-001																																														
Num Field 1:	2015 NRC																																														
Num Field 2:	NA																																														
Text Field:	B																																														
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> <tr> <th colspan="4">Source Documentation</th> </tr> <tr> <td>Source:</td> <td colspan="2">New Exam item Modified Bank XILT Exam Bank</td> <td>Previous NRC Exam Other Exam Bank</td> </tr> <tr> <td>Reference(s):</td> <td colspan="3">T-250, RRC-23, T-226</td> </tr> <tr> <td>Learning Objective:</td> <td colspan="3">PLOT-5023-5c</td> </tr> <tr> <td>K/A System:</td> <td>295025 High Reactor Pressure</td> <td colspan="2">Importance: RO / SRO 3.8/ 3/9</td> </tr> <tr> <td>K/A Statement:</td> <td colspan="3">EA1.04 - Ability to operate and/or monitor the following as they apply to HIGH REACTOR PRESSURE: HPCI</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:	New Exam item Modified Bank XILT Exam Bank		Previous NRC Exam Other Exam Bank	Reference(s):	T-250, RRC-23, T-226			Learning Objective:	PLOT-5023-5c			K/A System:	295025 High Reactor Pressure	Importance: RO / SRO 3.8/ 3/9		K/A Statement:	EA1.04 - Ability to operate and/or monitor the following as they apply to HIGH REACTOR PRESSURE: HPCI			REQUIRED MATERIALS:	None			Notes and Comments:	None		
Psychometrics																																															
Level of Knowledge	Difficulty	Time Allowance (minutes)	RO																																												
HIGH			10CRF55.41(b)(7)																																												
Source Documentation																																															
Source:	New Exam item Modified Bank XILT Exam Bank		Previous NRC Exam Other Exam Bank																																												
Reference(s):	T-250, RRC-23, T-226																																														
Learning Objective:	PLOT-5023-5c																																														
K/A System:	295025 High Reactor Pressure	Importance: RO / SRO 3.8/ 3/9																																													
K/A Statement:	EA1.04 - Ability to operate and/or monitor the following as they apply to HIGH REACTOR PRESSURE: HPCI																																														
REQUIRED MATERIALS:	None																																														
Notes and Comments:	None																																														

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

50

ID: 1104045

Points: 1.00

- Unit 2 is at 100% power
- A small steam leak occurs in the Drywell
- The PRO transfers "House Loads" as directed by the Control Room Supervisor
- Drywell pressure suddenly rises to 3 psig
- RPV level drops to -15 inches then recovers to 10 inches

Based on the above conditions, the Reactor Recirculation Pumps will _____.

- A. trip
- B. runback to 30% speed
- C. runback to 45% speed
- D. continue to operate at the same speed

Answer: B

Answer Explanation		
Choice		Basis or Justification
Correct:	B	Recirc runsback to 30% based when RPV level drops to 17 inches with the scram signal generated by the high Drywell pressure condition.
Distractors:	A	The Recirc pumps will not trip because house loads had been transferred before the scram and RPV level did not drop to -48 inches. Plausible if the candidate does not recall that transferring house loads prevents the Recirc pump trip on the turbine trip/fast transfer.
	C	Plausible if the candidate does not recall that the runback is to 30% not 45% on the scram.
	D	Plausible if the candidate does not recognize the 3 psig Drywell signal or the -15 inch RPV level conditions as scram signals.

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

Question 50 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:	1104045																																														
User-Defined ID:																																															
Cross Reference Number:	295006AA1.04																																														
Topic:	ILT-5002-3b-003																																														
Num Field 1:	2015 NRC																																														
Num Field 2:																																															
Text Field:																																															
Comments:	<table border="1"> <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> <tr> <td>HIGH</td> <td></td> <td></td> <td>10CRF55.41(b)(7)</td> </tr> <tr> <th colspan="4">Source Documentation</th> </tr> <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> <td> <input type="checkbox"/> Previous NRC Exam <input type="checkbox"/> Other Exam Bank </td> </tr> <tr> <td>Reference(s):</td> <td colspan="3">ARC-214 B-3</td> </tr> <tr> <td>Learning Objective:</td> <td colspan="3">PLOT-5002-3b</td> </tr> <tr> <td>K/A System:</td> <td colspan="2">295006 SCRAM</td> <td>Importance: RO / SRO 3.1/ 3.2</td> </tr> <tr> <td>K/A Statement:</td> <td colspan="3">AA1.04 - Ability to operate and/or monitor the following as they apply to SCRAM: Recirculation system</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> </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"/> Modified Bank <input type="checkbox"/> ILT Exam Bank		<input type="checkbox"/> Previous NRC Exam <input type="checkbox"/> Other Exam Bank	Reference(s):	ARC-214 B-3			Learning Objective:	PLOT-5002-3b			K/A System:	295006 SCRAM		Importance: RO / SRO 3.1/ 3.2	K/A Statement:	AA1.04 - Ability to operate and/or monitor the following as they apply to SCRAM: Recirculation system			REQUIRED MATERIALS:	None			Notes and Comments:	None		
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"/> Modified Bank <input type="checkbox"/> ILT Exam Bank		<input type="checkbox"/> Previous NRC Exam <input type="checkbox"/> Other Exam Bank																																												
Reference(s):	ARC-214 B-3																																														
Learning Objective:	PLOT-5002-3b																																														
K/A System:	295006 SCRAM		Importance: RO / SRO 3.1/ 3.2																																												
K/A Statement:	AA1.04 - Ability to operate and/or monitor the following as they apply to SCRAM: Recirculation system																																														
REQUIRED MATERIALS:	None																																														
Notes and Comments:	None																																														

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

51

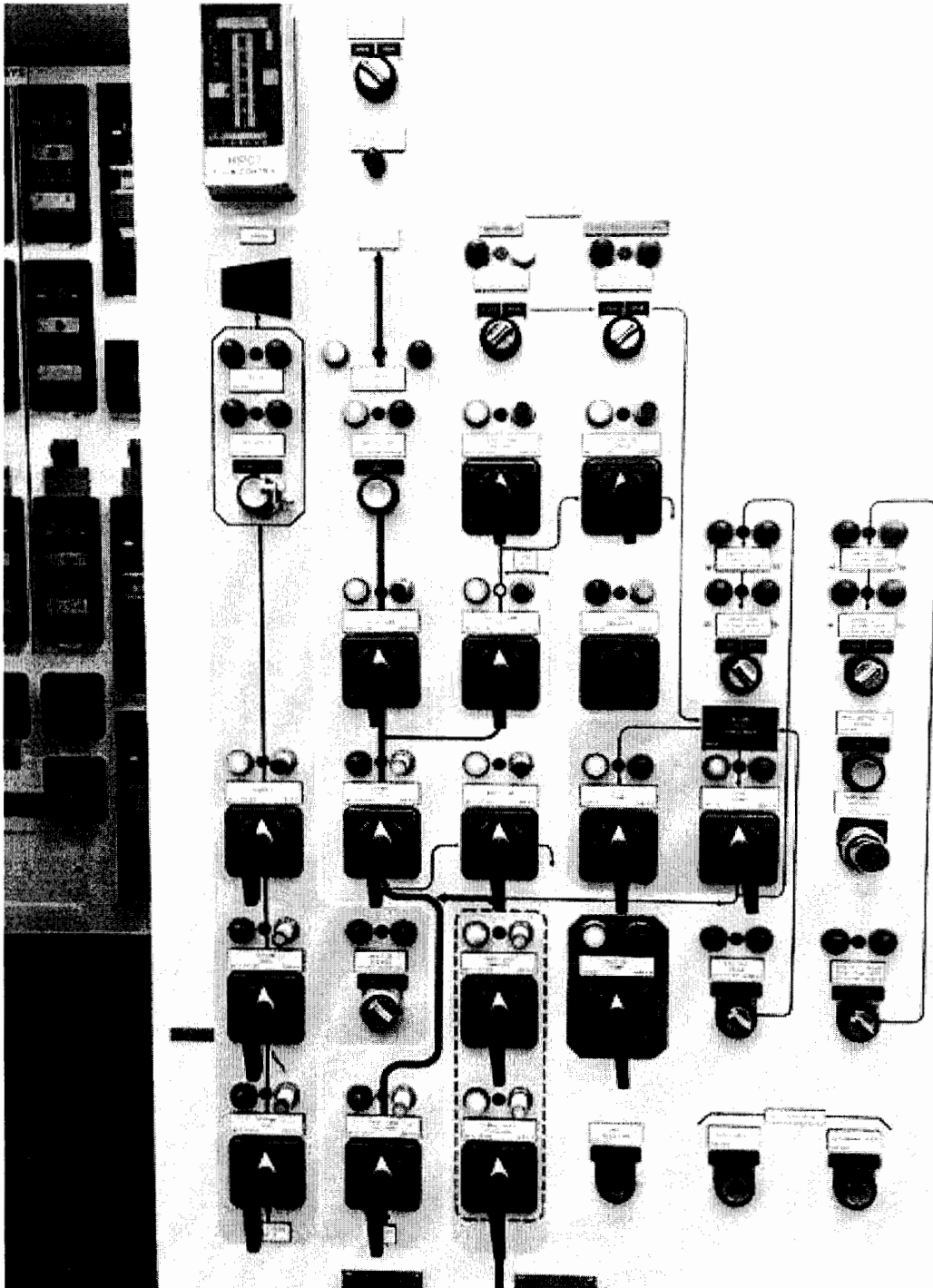
ID: 1104047

Points: 1.00

Reference the picture below of the HPCI system Panel 20C04B.

Based on the HPCI System status, a loss of ____ (1) ____ D.C. has occurred. The HPCI system ____ (2) ____ available.

(The answer choices are on the next page)



EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

- A. (1) Division I
(2) is
- B. (1) Division I
(2) is not
- C. (1) Division II
(2) is
- D. (1) Division II
(2) is not

Answer: D

Answer Explanation		
Choice		Basis or Justification
Correct:	D	Division II is the power supply to HPCI. The indicating light being out indicate a loss of D.C. power. Without power to the turbine stop valve , control valve, or flow controller (for example) the HPCI system is not available.
Distractors:	A	Division II is the power supply not Division I. No power to the turbine stop valve , control valve, or flow controller (for example) makes the system unavailable. Plausible if the candidate does not recall the power supply to HPCI or does not correctly interpret the picture and believes that HPCI is available.
	B	Division II is the power supply not Division I. No power to the turbine stop valve , control valve, or flow controller (for example) makes the system unavailable. Plausible if the candidate does not recall the power supply to HPCI.
	C	No power to the turbine stop valve , control valve, or flow controller (for example) makes the system unavailable. Plausible if the candidate does not correctly interpret the picture and believes that HPCI is available.

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

Question 51 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:	1104047																																														
User-Defined ID:																																															
Cross Reference Number:	295004 AA2.04																																														
Topic:	ILT-5057-6c-004																																														
Num Field 1:	2015 NRC																																														
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Psychometrics																																															
Level of Knowledge	Difficulty	Time Allowance (minutes)	RO																																												
HIGH			10CRF55.41(b)(7)																																												
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Reference(s):	E-26, PLOT 5057, PLOT 5023																																														
Learning Objective:	PLOT-5057-6c																																														
K/A System:	295004 Partial or complete loss of D.C. Power		Importance: RO / SRO 3.2/ 3.3																																												
K/A Statement:	AA2.04 Ability to determine and/or interpret the following as they apply to PARTIAL OR COMPLETE LOSS OF D.C. POWER: System lineups																																														
REQUIRED MATERIALS:	None																																														
Notes and Comments:	None																																														

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

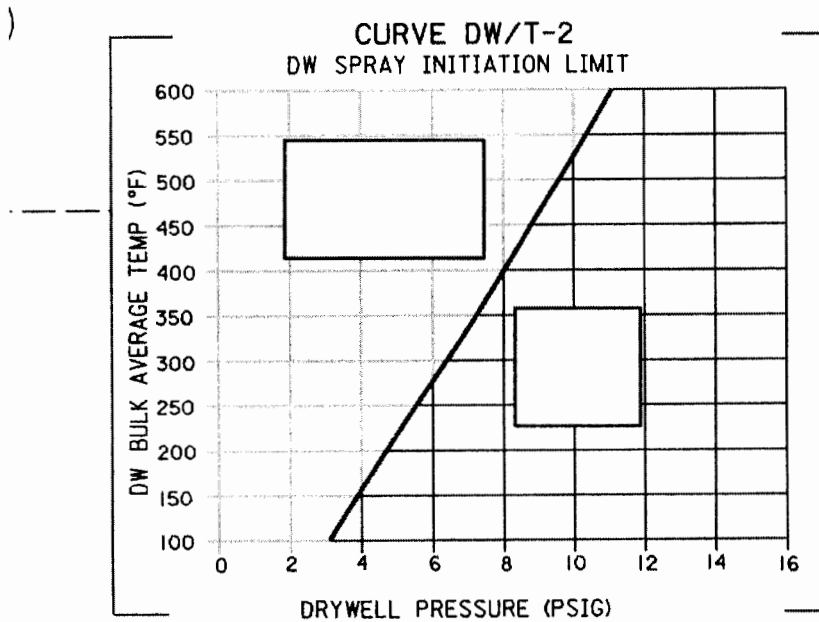
52

ID: 1104051

Points: 1.00

- A loss of cooling has occurred to the Unit 2 Drywell
- Drywell temperature is currently 200 degrees F

For the above conditions, use the Drywell Spray Initiation Limit Curve below to select the correct statement with respect to Drywell pressure and the ability to spray.



Drywell pressure will be approximately ____ (1) ____ psig. Drywell sprays ____ (2) ____ permitted.

- A. (1) 2
(2) are
- B. (1) 2
(2) are NOT
- C. (1) 8
(2) are
- D. (1) 8
(2) are NOT

Answer: B

EXAMINATION ANSWER KEY

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Answer Explanation		
Choice		Basis or Justification
Correct:	B	Without a steam leak Drywell pressure rise will be based solely on the heat up of the Drywell air space. Simulator data shows that when drywell temperature reaches 200 degrees F Drywell pressure will be approximately 2 psig. Plotting 2 psig and 200 degrees F is on the UNSAFE side of the Drywell spray curve (left side). The right side of the curve is the SAFE side.
Distractors:	A	Plausible if the candidate does not understand the safe side of the Drywell spray curve.
	C	Plausible if the candidate does not understand the Pressure temperature relationship of the containment. Plausible if the candidate does not understand the safe side of the Drywell spray curve.
	D	Plausible if the candidate does not understand the Pressure temperature relationship of the containment. Plausible if the candidate does not understand the safe side of the Drywell spray curve.

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

Question 52 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:	1104051																																														
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Topic:	ILT-2102-5-003																																														
Num Field 1:	2015 NRC																																														
Num Field 2:																																															
Text Field:																																															
Comments:	<table border="1"> <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> <tr> <td>HIGH</td> <td></td> <td></td> <td>10CRF55.41(b)(3)</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">SE-11, simulator modeling</td> </tr> <tr> <td>Learning Objective:</td> <td colspan="3">PLOT-2102-5</td> </tr> <tr> <td>K/A System:</td> <td>295028 High Drywell Temperature</td> <td colspan="2">Importance: RO / SRO 4.1/ 4.2</td> </tr> <tr> <td>K/A Statement:</td> <td colspan="3">EA2.04 - Ability to determine and/or interpret the following as they apply to HIGH DRYWELL TEMPERATURE: Drywell 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> </table>			Psychometrics				Level of Knowledge	Difficulty	Time Allowance (minutes)	RO	HIGH			10CRF55.41(b)(3)	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):	SE-11, simulator modeling			Learning Objective:	PLOT-2102-5			K/A System:	295028 High Drywell Temperature	Importance: RO / SRO 4.1/ 4.2		K/A Statement:	EA2.04 - Ability to determine and/or interpret the following as they apply to HIGH DRYWELL TEMPERATURE: Drywell pressure			REQUIRED MATERIALS:	None			Notes and Comments:	None		
Psychometrics																																															
Level of Knowledge	Difficulty	Time Allowance (minutes)	RO																																												
HIGH			10CRF55.41(b)(3)																																												
Source Documentation																																															
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Reference(s):	SE-11, simulator modeling																																														
Learning Objective:	PLOT-2102-5																																														
K/A System:	295028 High Drywell Temperature	Importance: RO / SRO 4.1/ 4.2																																													
K/A Statement:	EA2.04 - Ability to determine and/or interpret the following as they apply to HIGH DRYWELL TEMPERATURE: Drywell pressure																																														
REQUIRED MATERIALS:	None																																														
Notes and Comments:	None																																														

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

53

ID: 1104052

Points: 1.00

A transient has occurred on Unit 3 that results in fuel cladding damage. The following conditions exist:

- The reactor is shut down and all URO and PRO scram actions are complete
- RPV level lowered to -15 inches on the manual scram
- MSL radiation levels are 5000 mrem/hr and steady
- 10 minutes after the scram
 - Vent Stack radiation levels are rising
 - Main Stack radiation levels are rising

Based on the above information, Vent Stack radiation levels are rising due to a steam leak in the ____ (1) ____ and Main Stack radiation levels are rising due to a release from the ____ (2) ____.

- A. (1) Reactor Building
(2) Steam Packing Exhauster
- B. (1) Reactor Building
(2) Off Gas System
- C. (1) Turbine Building
(2) Steam Packing Exhauster
- D. (1) Turbine Building
(2) Off Gas System

Answer: C

Answer Explanation		
Choice		Basis or Justification
Correct:	C	Turbine Building ventilation is always directed to the Vent Stack. A steam leak in the Turbine Building would show on the vent stack. The SPE is always directed to the Main Stack without any hold up time. The radioactive steam for the seals would be exhausted to the Main Stack.
Distractors:	A	A steam leak in the Reactor Building would be directed to the Main Stack via SGBT following the scram. Plausible if the candidate does not recognize the signal to initiate SGBT and isolate Reactor Building ventilation.
	B	A steam leak in the Reactor Building would be directed to the Main Stack via SGBT following the scram. Plausible if the candidate does not recognize the signal to initiate SGBT and isolate Reactor Building ventilation. There is a 90 hour holdup time on the Off gas system. Radiation levels indicating on the Main Stack would not rise in 10 minutes following the event from the Off gas system. Plausible if the candidate does not recall the function of the off gas system.

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

	D	There is a 90 hour holdup time on the Off gas system. Radiation levels indicating on the Main Stack would not rise in 10 minutes following the event from the Off gas system. Plausible if the candidate does not recall the function of the off gas system.
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Question 53 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:	1104052																																														
User-Defined ID:																																															
Cross Reference Number:	295038EA2.04																																														
Topic:	ILT-2104-5-006																																														
Num Field 1:	2015 NRC																																														
Num Field 2:																																															
Text Field:																																															
Comments:	<table border="1"> <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> <tr> <td>HIGH</td> <td></td> <td></td> <td>10CRF55.41(b)(5)</td> </tr> <tr> <th colspan="4">Source Documentation</th> </tr> <tr> <td>Source:</td> <td colspan="2">XNew Exam item Modified Bank ILT Exam Bank</td> <td>Previous NRC Exam Other Exam Bank</td> </tr> <tr> <td>Reference(s):</td> <td colspan="3">ON-104, T-104</td> </tr> <tr> <td>Learning Objective:</td> <td colspan="3">PLOT 2104-5</td> </tr> <tr> <td>K/A System:</td> <td>295038 High Off-Site Release Rate</td> <td colspan="2">Importance: RO / SRO 4.1/ 4.5</td> </tr> <tr> <td>K/A Statement:</td> <td colspan="3">EA2.04 Ability to determine and/or interpret the following as they apply to HIGH OFF-SITE RELEASE RATE: Source of off-site release</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> </table>			Psychometrics				Level of Knowledge	Difficulty	Time Allowance (minutes)	RO	HIGH			10CRF55.41(b)(5)	Source Documentation				Source:	XNew Exam item Modified Bank ILT Exam Bank		Previous NRC Exam Other Exam Bank	Reference(s):	ON-104, T-104			Learning Objective:	PLOT 2104-5			K/A System:	295038 High Off-Site Release Rate	Importance: RO / SRO 4.1/ 4.5		K/A Statement:	EA2.04 Ability to determine and/or interpret the following as they apply to HIGH OFF-SITE RELEASE RATE: Source of off-site release			REQUIRED MATERIALS:	None			Notes and Comments:	None		
Psychometrics																																															
Level of Knowledge	Difficulty	Time Allowance (minutes)	RO																																												
HIGH			10CRF55.41(b)(5)																																												
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K/A Statement:	EA2.04 Ability to determine and/or interpret the following as they apply to HIGH OFF-SITE RELEASE RATE: Source of off-site release																																														
REQUIRED MATERIALS:	None																																														
Notes and Comments:	None																																														

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

54

ID: 1109929

Points: 1.00

- The Crew has entered ON-125, "Loss or Unavailability of Shutdown Cooling" due to a trip of the 2A HPSW pump.
- The CRS has determined that in order to restore Shutdown Cooling the other HPSW pump in the "A" loop will be started.

Before starting the HPSW pump the operator will direct all personnel to stay clear of the _____.

- A. "B" HPSW pump ONLY
- B. "C" HPSW pump ONLY
- C. "B" HPSW pump and the E-22 bus
- D. "C" HPSW pump and the E-32 bus

Answer: D

Answer Explanation		
Choice		Basis or Justification
Correct:	D	OP-PB-101-111 section 4.6.6 directs that the operator should announce 4KV pump starts that should include the 4 KV bus powering the pump. The "C" HPSW is the pump in the loop with the "A" HPSW.
Distractors:	A	Plausible if the candidate does not know what the requirement in OP-PB-101-111 is or which pump is in the loop with the "A" RHR pump.
	B	Plausible if the candidate does not know which pump is in the loop with the "A" RHR pump.
	C	Plausible if the candidate does not know what the requirement of OP-PB-101-111.

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

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:	0.00																																														
System ID:	1109929																																														
User-Defined ID:																																															
Cross Reference Number:	295021 2.1.14																																														
Topic:	ILT-1529-1q-001																																														
Num Field 1:	2015 NRC																																														
Num Field 2:																																															
Text Field:																																															
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Psychometrics																																															
Level of Knowledge	Difficulty	Time Allowance (minutes)	RO																																												
MEMORY			10CRF55.41(b)(10)																																												
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K/A Statement:	2.1.20 - Ability to interpret and execute procedure steps.																																														
REQUIRED MATERIALS:	None																																														
Notes and Comments:	None																																														

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

55

ID: 1118626

Points: 1.00

- The station is experiencing a fire in the Radwaste Building El. 135' - 4KV Switchgear Corridor
- T-357-2, "Area 57 Fire Guide", Attachment 4 is in progress to bypass SV-2-16A-8130A, "ADS Backup Nitrogen A Hdr Supply to Drywell"

Performance of Attachment 4 will ensure a long-term nitrogen supply to the ____ (1) ____ Safety Relief Valves (SRVs).

Restoring long-term supply to these SRVs ____ (2) ____ meet the T-112, "Emergency Blowdown" requirement for number of relief valves for a blowdown.

- A. 1) G and K (ONLY)
 (2) does not
- B. (1) A, B, and C (ONLY)
 (2) does not
- C. (1) A, B and C (ONLY)
 (2) does
- D. (1) A, B, C, G and K
 (2) does

Answer: B

Answer Explanation		
Choice		Basis or Justification
Correct:	B	SRVs A, B, and C will be supplied with Nitrogen from the ADS bottles and 5 SRVs are required for a T-112 blowdown.
Distractors:	A	Incorrect. ONLY the A, B and C SRVs will be supplied with Nitrogen from the ADS bottles and 5 SRVs are required for a T-112 blowdown. Plausible if the candidate does not understand the purpose of T-357 or the nitrogen supplied by SV-8130A.
	C	Incorrect. ONLY the A, B and C SRVs will be supplied with Nitrogen from the ADS bottles and 5 SRVs are required for a T-112 blowdown. Plausible if the candidate does not understand the purpose of T-357 or the nitrogen supplied by SV-8130A. Three SRVs do not meet the T-112 blowdown requirement. Plausible if the candidate does not understand the T-112 blowdown requirements.
	D	Incorrect. SV-8130A does not provide nitrogen to all of the ADS valves. Plausible if the candidate does not understand the purpose of T-357 or the nitrogen supplied by SV-8130A.

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

Question 55 Info																																															
Question Type:	Multiple Choice																																														
Status:	Active																																														
Always select on test?	No																																														
Authorized for practice?	No																																														
Points:	1.00																																														
Time to Complete:	0																																														
Difficulty:	2.00																																														
System ID:	1118626																																														
User-Defined ID:																																															
Cross Reference Number:	600000 2.4.8																																														
Topic:	ILT-2112-3-002																																														
Num Field 1:	2015 NRC																																														
Num Field 2:																																															
Text Field:																																															
Comments:	<table border="1"> <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> <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 <input type="checkbox"/> Previous NRC Exam <input type="checkbox"/> Modified Bank Item <input type="checkbox"/> Other Exam Bank <input type="checkbox"/> ILT Exam Bank </td> </tr> <tr> <td>Reference(s):</td> <td colspan="3">M-333, T-357-2, Area 57 Fire Guide</td> </tr> <tr> <td>Learning Objective:</td> <td colspan="3">PLOT 2112-3</td> </tr> <tr> <td>K/A System:</td> <td>600000 Plant Fire on Site</td> <td colspan="2">Importance: RO / SRO 3.8 / 4.5</td> </tr> <tr> <td colspan="4">K/A Statement: 2.4.8 - Knowledge of how abnormal operating procedures are used in conjunction with EOPs</td> </tr> <tr> <td colspan="2">REQUIRED MATERIALS:</td> <td colspan="2">NONE</td> </tr> <tr> <td colspan="2">Notes and Comments:</td> <td colspan="2"></td> </tr> </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"/> Previous NRC Exam <input type="checkbox"/> Modified Bank Item <input type="checkbox"/> Other Exam Bank <input type="checkbox"/> ILT Exam Bank			Reference(s):	M-333, T-357-2, Area 57 Fire Guide			Learning Objective:	PLOT 2112-3			K/A System:	600000 Plant Fire on Site	Importance: RO / SRO 3.8 / 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:			
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Reference(s):	M-333, T-357-2, Area 57 Fire Guide																																														
Learning Objective:	PLOT 2112-3																																														
K/A System:	600000 Plant Fire on Site	Importance: RO / SRO 3.8 / 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:																																															

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

56

ID: 1104504

Points: 1.00

- The Nuclear Duty Officer informs Peach Bottom that a Maximum Emergency Generation Alert has been declared.
- The Off-site electrical lineup is normal.
- The Transmission System Operator reports the following voltages:
 - Nottingham 220-08 Line 230 kV
 - Cooper 220-08 Line 230 kV
 - Newlinville 220-34 Line 220 kV
 - Peach Bottom # 1 Transformer 13.0 kV

In accordance with SE-16, "Grid Emergency", and the associated Table 1, choose the correct action below with regard to Off-site sources.

TABLE 1

OFFSITE SOURCE	MINIMUM VOLTAGE
Nottingham 220-08 Line (2SU)	≥ 225.0 kV
Cooper 220-08 Line (2SU)	≥ 225.0 kV
Newlinville 220-34 Line (343SU)	≥ 225.0 kV
Peach Bottom #1 Transformer (3SU)	≥ 13.50 kV (13 kV side)

- A. All required off-site sources are operable. Continue to monitor Table 1 voltages.
- B. One required off-site source is inoperable. Perform ST-O-054-950, "Offsite and Onsite Electrical Power Breaker Alignment and Power Availability Check within 1 hour.
- C. Two required off-site sources are inoperable. Perform ST-O-054-950, "Offsite and Onsite Electrical Power Breaker Alignment and Power Availability Check within 1 hour.
- D. Two required off-site sources are inoperable. Perform a 3.0.3 shutdown.

Answer: B

EXAMINATION ANSWER KEY

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Answer Explanation		
Choice		Basis or Justification
Correct:	B	Voltage on the 220-34 line is below the acceptable value, per SE-16 this makes the circuit INOP. Tech Spec requires that for an INOP offsite circuit that ST-O-054-950, "Offsite and Onsite Electrical Power Breaker Alignment and Power Availability Check" be performed within 1 hour.
Distractors:	A	The 220-34 line is below the minimum value. Plausible if the candidate does not know how to interpret the table or does not recall that a voltage below the minimum makes the circuit INOP.
	C	The # 1 Transformer voltage is low but that source is not being used to supply power to the 4KV buses so it is not considered when considering operable circuits. Plausible if the candidate does not understand what the normal electrical line is and which sources are providing power to the 4 Kv buses.
	D	The # 1 Transformer voltage is low but that source is not being used to supply power to the 4KV buses so it is not considered when considering operable circuits. Plausible if the candidate does not understand what the normal electrical line is and which sources are providing power to the 4 Kv buses. 3.0.3 shutdown is not the correct action to take for this condition. Plausible if the candidate confused the required actions for offsite circuits INOP with Offsite circuits and DG INOP.

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

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:	1.00		
System ID:	1104504		
User-Defined ID:			
Cross Reference Number:	700000 2.2.42		
Topic:	ILT-1555-3-019-SE-16		
Num Field 1:	2015 NRC		
Num Field 2:			
Text Field:			
Comments:	Psychometrics		
	Level of Knowledge	Difficulty	Time Allowance (minutes)
	HIGH		10CRF55.41(b)(10)
	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):	SE-16, Tech Spec 3.8.1, 3.8.2	
	Learning Objective:	PLOT-155-3	
	K/A System:	700000 Generator Voltage and Electric Grid Disturbances	Importance: RO / SRO 3.9/ 4.6
	K/A Statement:	2.2.42 - Ability to recognize system parameters that are entry-level conditions for Technical Specifications.	
	REQUIRED MATERIALS:	None	
	Notes and Comments:	None	

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

57

ID: 1104525

Points: 1.00

- Unit 2 is in Mode 5 with refueling activities in progress
- An irradiated fuel bundle is dropped
- Reactor Building and Refuel Floor Exhaust Rad monitors indicate as follows:

Reactor Bldg Exhaust	
Ch. A	10 mR/hr
Ch. B	18 mR/hr
Ch. C	8 mR/hr
Ch. D	22 mR/hr

Refuel Floor Exhaust	
Ch. A	20 mR/hr
Ch. B	10 mR/hr
Ch. C	18 mR/hr
Ch. D	8 mR/hr

Based on the above indications, how will Reactor Building Ventilation and SBGT respond?

- A. Reactor Building AND Refuel Floor Ventilation continue to operate. SBGT does NOT initiate.
- B. Reactor Building Ventilation isolates. SBGT initiates and aligns to the Reactor Building ONLY.
- C. Refuel Floor Ventilation isolates. SBGT initiates and aligns to the Refuel Floor ONLY.
- D. Reactor Building AND Refuel Floor Ventilation isolate. SBGT initiates and aligns to the Reactor Building AND Refuel Floor.

Answer: A

Answer Explanation		
Choice		Basis or Justification
Correct:	A	GR III isolation has NOT occurred. PCIS logic is A or C AND B or D; setpoint is 16 mR/hr (12 mR/hr per ARC). Either RB or RF logic channels will isolate RB AND RF ventilation. In the given conditions, a half-isolation is present from EACH ventilation system, but the isolation signal is NOT complete.
Distractors:	B	GR III isolation has not occurred. Plausible if candidate does not understand logic and function of Group III isolation.
	C	GR III isolation has not occurred. Plausible if candidate does not understand logic and function of Group III isolation.
	D	GR III isolation has not occurred. Plausible if candidate does not understand logic and function of Group III isolation.

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

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:	1.00																																														
System ID:	1104525																																														
User-Defined ID:	13 CERT																																														
Cross Reference Number:	261000A3.03																																														
Topic:	ILT-1550-27b-001																																														
Num Field 1:	2015 NRC																																														
Num Field 2:																																															
Text Field:																																															
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Notes and Comments:	None																																														

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

58

ID: 994686

Points: 1.00

- The atmosphere in the Main Control Room (MCR) has become contaminated by smoke due to a transformer fire in the North Substation.
- Shift management has determined that safe operation of the plant is impacted and the use of SCBAs is required due to throat irritation.
- The smoke is NOT limiting vision.

Based on the above conditions, which of the below statements accurately identifies required actions per SE-17, "MCR Atmosphere Non-Radioactive Contamination"?

MCR evacuation is _____.

- A. required. Perform GP-4, Reactor Scram, then enter and execute SE-10, Alternative Plant Shutdown.
- B. required. Perform GP-4, Reactor Scram, then enter and execute SE-1, Plant Shutdown from the Remote Shutdown Panel.
- C. NOT required. Secure all MCR ventilation. Enter and execute ON-115, Loss of Normal MCR Ventilation
- D. NOT required. Place MCR ventilation in the purge mode per SO 40D.5.A, Control Room Ventilation Purge Air System

Answer: C

Answer Explanation		
Choice		Basis or Justification
Correct:	C	Correct. SE-17, MCR Atmosphere Non-Radioactive Contamination, is entered based on determination that safe operations are jeopardized. For the described conditions SE-17 directs securing MCR ventilation and ON-115 entry.
Distractors:	A	Incorrect - Presence of an irritant does NOT require immediate MCR evacuation. Conditions at the Remote Shutdown Panel or Alternate Shutdown Panels may not be any different as all plant ventilation draws from the East side of the plant. Evacuation of the MCR is performed ONLY after an assessment of atmospheric conditions at those operating areas and Shift Management determination that the plant cannot be safely operated from the MCR. Plausible if the candidate does not recall the purpose of SE-17 and does not remember the purpose of SE-10.
	B	Incorrect - Presence of an irritant does NOT require immediate MCR evacuation. Conditions at the Remote Shutdown Panel or Alternate Shutdown Panels may not be any different as all plant ventilation draws from the East side of the plant. Evacuation of the MCR is performed ONLY after an assessment of atmospheric conditions at those operating areas and Shift Management determination that the plant cannot be safely operated from the MCR. Plausible if the candidate does not recall the purpose of SE-17 and does not remember the purpose of SE-1.

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

	D	Incorrect - Purge mode will NOT stop intake of contaminated air. Plausible if the candidate does not understand the operation of the purge mode of control room ventilation.
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Question 58 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																																														
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Cross Reference Number:	295016AK2.03																																														
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EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

59

ID: 1118711

Points: 1.00

Unit 3 is at rated conditions.

- North Isolation Valve Room temperature is 205 degrees F and rising
- Annunciator 315 E-2 "REACTOR BUILDING FLOOR DRAIN SUMP HI-HI" is flashing
- Vent Stack RI-3979A and B are indicating 2.5×10^{-5} $\mu\text{Ci/cc}$ and rising
- The crew has entered T-103, "Secondary Containment Control"

Based on the above conditions, which of the following should be isolated in order to eliminate the radiological release?

- A. RWCU
- B. RCIC
- C. HPCI
- D. MSIVs

Answer: C

Answer Explanation		
Choice		Basis or Justification
Correct:	C	The North Isolation Valve Room (NIVR) is the only reactor building area with rising temperature. 200 degrees F is indicative of a primary system steam leak. The HPCI steam supply piping penetrates the Drywell and runs through the North Isolation Valve Room on the way to the HPCI turbine. None of the other systems listed have piping in the NIVR. Rising Vent Stack radiation levels are indicative of a radiation release due to the primary system leak.
Distractors:	A	Incorrect. The RWCU System has no piping that runs through the NIVR. It penetrates the Drywell in the valve pit area which is an elevation above the NIVR.
	B	Incorrect. The RCIC System has no piping that runs through the NIVR. Steam supply piping for RCIC penetrates the Drywell in the Outboard MSIV Room.
	D	Incorrect. The Main Steam Lines penetrate the Drywell in the Outboard MSIV Room. Closing the MSIVs would not eliminate the steam leak in the NIVR.

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

Question 59 Info																															
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Status:	Active																														
Always select on test?	No																														
Authorized for practice?	No																														
Points:	1.00																														
Time to Complete:	0																														
Difficulty:	0.00																														
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User-Defined ID:																															
Cross Reference Number:	295032EK1.02																														
Topic:	ILT-2103-7a-002																														
Num Field 1:	2015 NRC																														
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REQUIRED MATERIALS:	None																														
Notes and Comments:	None																														

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

60

ID: 1104566

Points: 1.00

- Unit 2 was being shutdown per GP-3-2 "Normal Plant Shutdown"
- During the shutdown a loss of feedwater resulted in a low level scram
- The URO notes the scram air header pressure lowering and all blue scram lights are lit on the full core display
- Power initially lowers and is now stabilized at ~10%
- No CRD pumps are available
- Reactor pressure is 950 psig and steady

Which of the following describes an effective method of control rod insertion under the above conditions?

- A. Perform T-213, "Scram Solenoid Deenergization".
- B. Perform T-214, "Isolating and Venting the Scram Air Header".
- C. Perform T-216, "Control Rod Insertion by Manual Scram or Individual Scram Test Switches".
- D. Perform T-220, "Driving Control Rods During Failure to Scram".

Answer: C

Answer Explanation		
Choice		Basis or Justification
Correct:	C	The conditions listed indicate a hydraulic ATWS (Blue lights lit and Scram air header pressure dropping) this eliminates procedures T-213 and T-214 as options. The lack of an operating CRD pump eliminates procedure T-220 as an option. The correct answer is procedure T-216 with the hydraulic ATWS and no CRD pump but RPV pressure above 400 psig.
Distractors:	A	The conditions listed indicate a hydraulic ATWS (Blue lights lit and Scram air header pressure dropping) this eliminates procedures T-213 and T-214 as options. Plausible if the candidate does not understand the indications of a hydraulic ATWS.
	B	The conditions listed indicate a hydraulic ATWS (Blue lights lit and Scram air header pressure dropping) this eliminates procedures T-213 and T-214 as options. Plausible if the candidate does not understand the indications of a hydraulic ATWS.
	D	The lack of an operating CRD pump eliminates procedure T-220 as an option. Plausible if the candidate does not recognize the lack of CRD as a prerequisite for use of T-220.

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

Question 60 Info																																															
Question Type:	Multiple Choice																																														
Status:	Active																																														
Always select on test?	No																																														
Authorized for practice?	No																																														
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REQUIRED MATERIALS:	None																																														
Notes and Comments:	None																																														

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

61

ID: 1104593

Points: 1.00

The following conditions currently exist following a small steam leak in the Drywell:

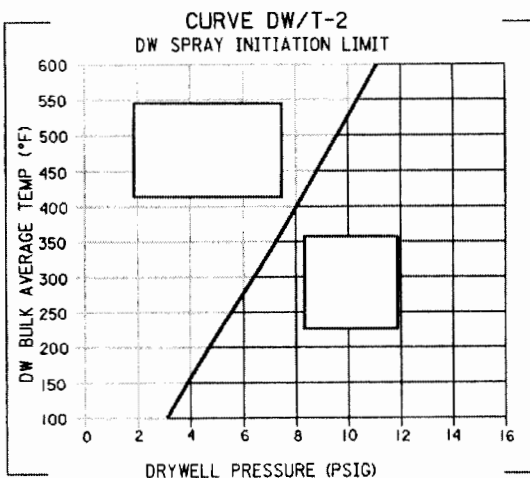
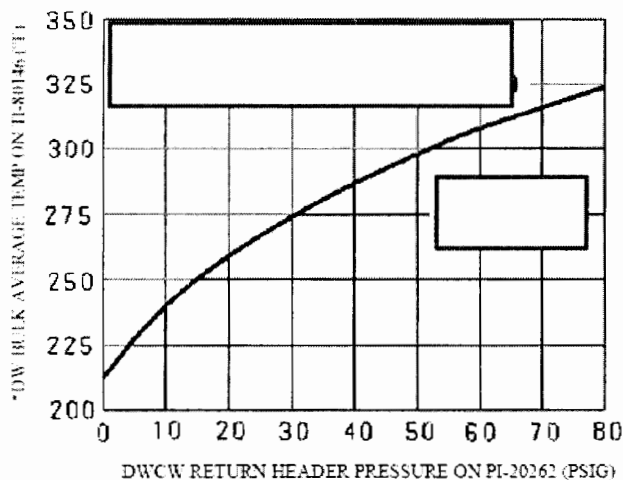
- Drywell Bulk Average Temperature is 140 degrees
- Drywell pressure is 2.5 psig
- Torus pressure is 1.8 psig
- Drywell Chilled Water Return Header pressure is 26 psig.

The Drywell Chilled Water Saturation and the Drywell Spray Initiation Limit Curves are provided below

The question and possible answer choices are on the next page.

FIGURE 1

DRYWELL CHILLED WATER (DWCW) SATURATION CURVE



EXAMINATION ANSWER KEY

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Based on the above conditions, what action is required in response to the high Drywell temperature?

- A. Maximize Drywell Cooling using RRC 44A.1 "Maximize Drywell Cooling" to control Drywell temperature.
- B. Maximize Drywell Cooling using T-223, "Drywell Cooler Fan Bypass" to control Drywell temperature.
- C. Spray the Torus using T-204, "Initiation of Containment Sprays Using RHR" to control containment pressure.
- D. Spray the Drywell using T-204, "Initiation of Containment Sprays Using RHR" to control containment pressure.

Answer: B

Answer Explanation		
Choice		Basis or Justification
Correct:	B	Conditions are on the safe side of the curve to place ventilation in service using T-223. This will provide cooling and help control drywell temperature. This question asks the candidate to determine how Drywell cooling can be placed in-service (increased) with a High Drywell Temperature condition. The candidate must evaluate the operating position on both the Drywell Spray initiation curve and the DW Chilled water saturation curve. The candidate must understand (show knowledge of) what options are available to increase Drywell cooling based on containment conditions.
Distractors:	A	Drywell pressure is above 2 psig. RRC-44A.1 can not be used because of the trip signal. Plausible if the candidate does not understand that the DW fans trip above 2 psig.
	C	Torus pressure is below the 2 psig pressure to spray the Torus. Plausible if the candidate does not recall the procedural requirement of > 2 psig to spray the Torus.
	D	Drywell temperature and pressure are on the unsafe side of the Drywell spray initiation curve.

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

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Time to Complete:	0																																														
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Notes and Comments:	None																																														

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

62

ID: 1109931

Points: 1.00

An ATWS is in-progress on Unit 2. The following conditions exist:

- Reactor power is 20%
- The Main Turbine is in-service controlling RPV pressure
- RPV level is being controlled with HPCI and RCIC between -100 and -130 inches
- Main Condenser vacuum is 18 inches Hg and getting worse.

Based on the above conditions, the Main Turbine ____ (1) ____ have automatically tripped.
The Main Turbine ____ (2) ____ be manually tripped.

- A. (1) should
(2) shall
- B. (1) should
(2) shall not
- C. (1) should not
(2) shall
- D. (1) should not
(2) shall not

Answer: A

Answer Explanation		
Choice		Basis or Justification
Correct:	A	The Main Turbine should have automatically tripped at 20 inches of vacuum. Any piece of equipment that has exceeded the automatic trip setpoint should be manually tripped.
Distractors:	B	Plausible if the candidate believes that tripping the turbine is not required during an ATWS.
	C	Plausible if the candidate does not recall the trip setpoint for the Main turbine.
	D	Plausible if the candidate does not recall the trip setpoint for the Main turbine. Plausible if the candidate believes that tripping the turbine is not required during an ATWS.

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

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:	1.00		
System ID:	1109931		
User-Defined ID:			
Cross Reference Number:	295002EA1.05		
Topic:	ILT-1540-2-002-OT-106		
Num Field 1:	2015 NRC		
Num Field 2:			
Text Field:			
Comments:	Psychometrics		
	Level of Knowledge	Difficulty	Time Allowance (minutes)
	HIGH		10CRF55.41(b)(7)
	Source Documentation		
	Source: denser	<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):	OT-106	
	Learning Objective:	PLOT-1540-2	
	K/A System:	295002 Loss of Main Condenser Vacuum	Importance: RO / SRO 3.2/ 3.2
	K/A Statement:	AA1.05 - Ability to operate and/or monitor the following as they apply to LOSS OF MAIN CONDENSER VACUUM: Main Turbine	
	REQUIRED MATERIALS:	None	
	Notes and Comments:	None	

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

63

ID: 1104604

Points: 1.00

Unit 2 is at 100% power when the "C" Reactor Feedpump minimum flow valve fails open.

Assuming NO Operator actions, AFTER RPV level stabilizes, Reactor power will be (1), the operator shall (2).

- A. (1) lower
(2) enter GP-2, "Normal Plant Startup" to raise power.
- B. (1) lower
(2) use GP-5, "Power Operations" to raise power.
- C. (1) higher
(2) use GP-5, "Power Operations" to lower power.
- D. (1) higher
(2) enter OT-104, "Positive Reactivity Insertion" to lower power.

Answer: D

Answer Explanation		
Choice		Basis or Justification
Correct:	D	When the min flow valve fails open it causes feedwater flow to rise to maintain RPV level. This means that feedwater spends less time in the feedwater heaters and feedwater temperature lowers. Colder feedwater into the reactor causes reactor power to rise. An unexpected rise in reactor power is an entry condition into OT-104.
Distractors:	A	Plausible if the candidate does not understand that the rise in feedwater flow causes feedwater temperature to lower. If the candidate does not recall that the heat source is finite and a rise in flow would make temperature lower.
	B	Plausible if the candidate does not understand that the rise in feedwater flow causes feedwater temperature to lower. If the candidate does not recall that the heat source is finite and a rise in flow would make temperature lower.
	C	GP-5 is not the procedure to enter on a transient it should only be entered for steady state operations. Plausible if the candidate does not recall the purpose of GP-5

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

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:	1.00																																														
System ID:	1104604																																														
User-Defined ID:																																															
Cross Reference Number:	295034 AA2.01																																														
Topic:	ILT-1620-2-001.																																														
Num Field 1:																																															
Num Field 2:																																															
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Comments:	<table border="1"> <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> <tr> <td>HIGH</td> <td></td> <td></td> <td>10CRF55.41(b)(14)</td> </tr> <tr> <th colspan="4">Source Documentation</th> </tr> <tr> <td>Source:</td> <td colspan="2">XNew Exam item Modified Bank ILT Exam Bank</td> <td>Previous NRC Exam Other Exam Bank</td> </tr> <tr> <td>Reference(s):</td> <td colspan="3">OT-104, GP-5</td> </tr> <tr> <td>Learning Objective:</td> <td colspan="3">PLOT-1620-2</td> </tr> <tr> <td>K/A System:</td> <td colspan="2">295014 Inadvertent Reactivity Addition</td> <td>Importance: RO / SRO 4.1/ 4.2</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 INADVERTENT REACTIVITY ADDITION: Reactor power</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> </table>			Psychometrics				Level of Knowledge	Difficulty	Time Allowance (minutes)	RO	HIGH			10CRF55.41(b)(14)	Source Documentation				Source:	XNew Exam item Modified Bank ILT Exam Bank		Previous NRC Exam Other Exam Bank	Reference(s):	OT-104, GP-5			Learning Objective:	PLOT-1620-2			K/A System:	295014 Inadvertent Reactivity Addition		Importance: RO / SRO 4.1/ 4.2	K/A Statement:	AA2.01 - Ability to determine and/or interpret the following as they apply to INADVERTENT REACTIVITY ADDITION: Reactor power			REQUIRED MATERIALS:	None			Notes and Comments:	None		
Psychometrics																																															
Level of Knowledge	Difficulty	Time Allowance (minutes)	RO																																												
HIGH			10CRF55.41(b)(14)																																												
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REQUIRED MATERIALS:	None																																														
Notes and Comments:	None																																														

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

64

ID: 993739

Points: 1.00

Alarm 226 A-4 "TORUS WATER LEVEL OUT OF NORMAL RANGE" is received.

A leak into Primary Containment has caused Torus level to rise to 17.1 feet.

The Crew has entered procedure T-102, "Primary Containment Control".

Per T-102, "Primary Containment Control", why is continued Reactor operation NOT allowed with Torus level above 17.1 feet?

- A. May result in the pressure suppression capability of the containment being insufficient to accommodate an RPV breach by core debris.
- B. Indicates SRV tailpipe damage will occur if SRVs are opened.
- C. Will cause primary containment failure during a blowdown due to the torus to drywell vacuum breakers being submerged.
- D. May exceed the pressure limit of the containment torus access hatches.

Answer: A

Answer Explanation		
Choice		Basis or Justification
Correct:	A	Receipt of the Torus high level alarm requires the crew to enter TRIP procedure T-102 "Primary Containment Control". Per the TRIP/SAMP Curves, Tables, & Limits - Bases; Torus water level of 17.1 feet is the Maximum Pressure Suppression Primary Containment Water Level (MPSPCWL). Operation with water level above the vent header is not permitted.
Distractors:	B	Plausible this is the bases for the other sections of the curve.
	C	Plausible relates to SRV failure due to high water level which is the bases for the other parts of the curve.
	D	Plausible if the candidate believes that the bases for the high level condition is a loading concern and the candidate does not know the location of the Torus access hatches.

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

Question 64 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:	993739																																														
User-Defined ID:	ILT-2102-7A-007																																														
Cross Reference Number:	295029 2.4.31																																														
Topic:	ILT-2102-7a-007 SRV Tailpipe Limit																																														
Num Field 1:	2015 NRC																																														
Num Field 2:	N/A																																														
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Psychometrics																																															
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MEMORY			10CRF55.41(b)(10)																																												
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K/A System:	295029 High Suppression Pool Water Level		Importance: RO / SRO 4.2/ 4.1																																												
K/A Statement:	2.4.31 - Knowledge of annunciator alarms, indications, or response procedures																																														
REQUIRED MATERIALS:	None																																														
Notes and Comments:	None																																														

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

65

ID: 994762

Points: 1.00

- Unit 2 is operating at 100% power
- The 'A' RPS bus was transferred to its alternate power supply
- Reactor Building Ventilation is being restored in accordance with SO 40B.1.A-2 "Reactor Building Ventilation System Startup and Normal Operation"
- After placing all system fans in their normal lineup, Reactor Building and Refuel Floor differential pressures on Panel 20C012 indicate +0.1 inches H₂O

Based on the above conditions, which one of the following actions is correct in accordance with SO 40B.1.A-2?

- A. remove one Reactor Building Exhaust Fan from service
- B. place one additional Reactor Building Supply Fan in service
- C. remove one Refuel Floor Supply Fan from service
- D. place one additional Equipment Cell Exhaust Fan in service

Answer: C

Answer Explanation		
Correct:	C	Per SO 40B.1.A-2, the normal ventilation system lineup is 1 Equipment Cell exhaust fan, 2 RB supply fans, 2 RB exhaust fans, 2 RF supply fans and 2 RF exhaust fans. Per the SO, if the normal ventilation system lineup does not establish normal differential pressure (-0.1 to -0.4 inches H ₂ O), the procedure directs removing one RF supply OR exhaust fan from service. In this case, a RF supply fan must be removed from service to establish the proper negative d/p. The question asks the candidate to evaluate the Secondary Containment d/p, determine that the value given is too high for continued operation then determine how to use the secondary containment ventilation system to return building d/p to an acceptable value.
Distractors:	A	Since normal differential pressure is -0.1 to -0.4 inches H ₂ O, removing one RB exhaust fan from service would cause differential pressures to become more positive. Plausible if applicant does not know required d/p range and/or does not understand ventilation system design.
	B	Since normal differential pressure is -0.1 to -0.4 inches H ₂ O, placing one additional RB supply fan in service would cause differential pressures to become more positive. In addition, SO 40B.1.A-2 gives direction to avoid running 3 RB supply or exhaust fans at the same time. Plausible if applicant does not know required d/p range and/or does not understand ventilation system design.

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

	D	This would make d/p negative, but SO 40B.1.A-2, Caution 4.5.1-1, prohibits running both Equipment Cell exhaust fans. Plausible if applicant does not recall SO 40B.1.A-2 cautions and limitations.
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Question 65 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:	994762																																												
User-Defined ID:	ILT-5040B-4B-001																																												
Cross Reference Number:	295035EK3.02																																												
Topic:	ILT-5040B-4b-001																																												
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Num Field 2:																																													
Text Field:	NRC-09-1																																												
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Psychometrics																																													
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K/A Statement:	EK3.02 - Knowledge of the reasons for the following responses as they apply to SECONDARY CONTAINMENT HIGH DIFFERENTIAL PRESSURE: Secondary containment ventilation response																																												
REQUIRED MATERIALS:	None																																												
Notes and Comments:	None																																												

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

66

ID: 994721

Points: 1.00

Which one of the following correctly describes control panel walk-down requirements per OP-AA-103-102, Watchstanding Practices?

- A. Panel walk-downs must be performed as directed and may not be deferred by any individual.
- B. Shift Manager approval is required to defer panel walk-downs under any conditions.
- C. The Unit Supervisor can give permission to defer panel walk-downs when plant conditions and/or critical evolutions would be adversely impacted by their performance.
- D. The Unit RO is authorized to decide when to defer from panel walk-downs if plant conditions and/or critical evolutions would be adversely impacted by their performance.

Answer: C

Answer Explanation		
Choice		Basis or Justification
Correct:	C	OP-AA-103-102 step 4.4.3 allows the Unit supervisor to defer the panel walkdowns.
Distractors:	A	Plausible if the candidate is not familiar with the OP procedure requirements.
	B	Plausible if the candidate is not familiar with the OP procedure requirements.
	D	Plausible if the candidate is not familiar with the OP procedure requirements.

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

Question 66 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:	994721																																														
User-Defined ID:	SROILT15291D005WATCH																																														
Cross Reference Number:	2.1.2																																														
Topic:	ILT-1529-1d-005 Watchstanding																																														
Num Field 1:	2015 NRC																																														
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K/A Statement:	2.1.2 - Knowledge of operator responsibilities during all modes of plant operation.																																														
REQUIRED MATERIALS:	None																																														
Notes and Comments:	None																																														

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

67

ID: 993547

Points: 1.00

Which one of the below statements identifies the design bases for the Automatic Depressurization System (ADS)?

- A. Provides a rapid depressurization during small nuclear system breaks allowing steam cooling to protect the fuel barrier.
- B. Provide a rapid depressurization to prevent a High Pressure Melt Ejection.
- C. Provides steam cooling during an ATWS to maintain Adequate Core Cooling.
- D. Provides for depressurization of the Reactor Coolant System during a small break Loss of Coolant Accident (LOCA) if HPCI fails or is unable to maintain the required RPV level.

Answer: D

Answer Explanation		
Choice		Basis or Justification
Correct:	D	UFSAR states that this is the purpose of ADS.
Distractors:	A	Plausible if the candidate confuses the purpose of ADS with some of the functions of relief valves.
	B	Plausible if the candidate confuses the purpose of ADS with actions taken in the EOP procedures to keep the Reactor depressurized.
	C	Plausible if the candidate confuses the purpose of ADS with some of the functions of relief valves.

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

Question 67 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																																														
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Cross Reference Number:	218000K5.01/2.1.27																																														
Topic:	ILT-5001G-1-001 Identify design bases of ADS system																																														
Num Field 1:	2015 NRC																																														
Num Field 2:	3																																														
Text Field:	B																																														
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Reference(s):	UFSAR, PLOT-5001G																																														
Learning Objective:	PLOT-5001G-1																																														
K/A System:	2.1 Conduct of Operations	Importance: RO / SRO 3.9/ 4.0																																													
K/A Statement:	2.1.27 - Knowledge of system purpose and/or function																																														
REQUIRED MATERIALS:	None																																														
Notes and Comments:	None																																														

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

68

ID: 1104627

Points: 1.00

It has been determined using OP-AA-108-110, "Evaluation of Special Tests or Evolutions" that an activity scheduled to be performed is a "Special Test".

Based on this information, a ____ (1) ____ briefing must be conducted by ____ (2) ____.

- A. (1) HLA/IPA
(2) the Senior Line Manager or Designee
- B. (1) HLA/IPA
(2) Work Execution Control Supervisor
- C. (1) Tailored Pre-Job
(2) the Senior Line Manager or Designee
- D. (1) Tailored Pre-Job
(2) Work Execution Control Supervisor

Answer: A

Answer Explanation		
Choice		Basis or Justification
Correct:	A	OP-AA-108-110 requires that a HLA/IPA brief be conducted by a Senior line manager or Designee
Distractors:	B	Plausible if the candidate does not recall the requirements of OP-AA-108-110. Operations Management does have required actions per the procedure but conducting the brief is not one of them.
	C	Plausible if the candidate does not understand that a Special test requires more than a Pre-Job brief.
	D	Plausible if the candidate does not understand that a Special test requires more than a Pre-Job brief. Plausible if the candidate does not recall the requirements of OP-AA-108-110. Operations Management does have required actions per the procedure but conducting the brief is not one of them.

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

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:	1104627																																														
User-Defined ID:																																															
Cross Reference Number:	2.2.7																																														
Topic:	ILT-1529-1p-001																																														
Num Field 1:	2015 NRC																																														
Num Field 2:																																															
Text Field:																																															
Comments:	<table border="1"> <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> <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="2"> <input checked="" type="checkbox"/> New Exam item <input type="checkbox"/> Modified Bank <input type="checkbox"/> ILT Exam Bank </td> <td> <input type="checkbox"/> Previous NRC Exam <input type="checkbox"/> Other Exam Bank </td> </tr> <tr> <td>Reference(s):</td> <td colspan="3">OP-AA-108-110</td> </tr> <tr> <td>Learning Objective:</td> <td colspan="3">PLOT-1529-1p</td> </tr> <tr> <td>K/A System:</td> <td>2.2 Equipment Control</td> <td colspan="2">Importance: RO / SRO 2.9/ 3.6</td> </tr> <tr> <td>K/A Statement:</td> <td colspan="3">2.2.7 - Knowledge of the process for conducting special or infrequent tests</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> </table>			Psychometrics				Level of Knowledge	Difficulty	Time Allowance (minutes)	RO	MEMORY			10CRF55.41(b)(10)	Source Documentation				Source:	<input checked="" type="checkbox"/> New Exam item <input type="checkbox"/> Modified Bank <input type="checkbox"/> ILT Exam Bank		<input type="checkbox"/> Previous NRC Exam <input type="checkbox"/> Other Exam Bank	Reference(s):	OP-AA-108-110			Learning Objective:	PLOT-1529-1p			K/A System:	2.2 Equipment Control	Importance: RO / SRO 2.9/ 3.6		K/A Statement:	2.2.7 - Knowledge of the process for conducting special or infrequent tests			REQUIRED MATERIALS:	None			Notes and Comments:	None		
Psychometrics																																															
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MEMORY			10CRF55.41(b)(10)																																												
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Reference(s):	OP-AA-108-110																																														
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K/A Statement:	2.2.7 - Knowledge of the process for conducting special or infrequent tests																																														
REQUIRED MATERIALS:	None																																														
Notes and Comments:	None																																														

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

69

ID: 993669

Points: 1.00

MA-AA-716-004 "Conduct of Troubleshooting" directs that which of the below organizations will assume the overall Lead for the troubleshooting evolution when the evolution expands beyond Simple Troubleshooting into Complex Troubleshooting?

- A. Engineering
- B. Maintenance
- C. Operations
- D. Work Control

Answer: A

Answer Explanation		
Choice		Basis or Justification
Correct:	A	MA-AA-716-004, step 2.11, states that when and where a Troubleshooting evolution expands beyond Simple Troubleshooting into Complex Troubleshooting, Engineering will assume the overall Lead for the Troubleshooting evolution.
Distractors:	B	The Maintenance Organization does have various responsibilities per MA-AA-716-001, but Engineering will assume the overall Lead for the Troubleshooting evolution when and where a Troubleshooting evolution expands beyond Simple Troubleshooting into Complex Troubleshooting.
	C	The Operations Organization does have various responsibilities per MA-AA-716-001, but Engineering will assume the overall Lead for the Troubleshooting evolution when and where a Troubleshooting evolution expands beyond Simple Troubleshooting into Complex Troubleshooting.
	D	The Work Control Organization does have various responsibilities per MA-AA-716-001, but Engineering will assume the overall Lead for the Troubleshooting evolution when and where a Troubleshooting evolution expands beyond Simple Troubleshooting into Complex Troubleshooting.

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

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:	993669																																														
User-Defined ID:	ILT-1750-22-001																																														
Cross Reference Number:	K 2.2.20																																														
Topic:	ILT-1570-15-001 TRT activity																																														
Num Field 1:	2015 NRC																																														
Num Field 2:	N/A																																														
Text Field:	B																																														
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Psychometrics																																															
Level of Knowledge	Difficulty	Time Allowance (minutes)	RO																																												
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Reference(s):	MA-AA-716-004																																														
Learning Objective:	PLOT-1570-15																																														
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K/A Statement:	2.2.20 - Knowledge of the process for managing troubleshooting activities																																														
REQUIRED MATERIALS:	None																																														
Notes and Comments:	None																																														

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

70

ID: 993139

Points: 1.00

The Unit 2 Transverse In-core Probe (TIP) Room Area Radiation Monitor (ARM) is indicating 0 mr/hr due to a defective detector.

This condition will cause which one of the below sets of indications?

- A. An alarm will sound in the Main Control Room AND the amber trip light on the local Auxiliary Unit (local to the TIP Room) will illuminate.
- B. The white downscale light will be illuminated on the Main Control Room ARM Indicator and Trip Unit AND the local klaxon alarm will sound.
- C. The white downscale light will be illuminated on the Main Control Room ARM Indicator and Trip Unit AND sound an alarm in the Main Control Room.
- D. The white downscale light will be illuminated on the Main Control Room ARM Indicator and Trip Unit AND the amber trip light on the local Auxiliary Unit (local to the TIP Room) will illuminate.

Answer: C

Answer Explanation		
Choice		Basis or Justification
Correct:	C	ARC-003 B-5 list the indications that will occur for the given condition, which include MCR alarm 003 B-5 and a white downscale light on actuation device (ARM trip unit) at Panels 20C011 OR 00C014.
Distractors:	A	The local amber trip light will not be lit. The amber light is for a high or upscale condition, not a downscale condition. Plausible if the candidate is not familiar with the indications available for the downscale condition.
	B	The local klaxon alarm will only sound for a high or upscale condition. Plausible if the candidate is not familiar with the indications available for the downscale condition.
	D	The local amber trip light will not be lit. The amber light is for a high or upscale condition, not a downscale condition. Plausible if the candidate is not familiar with the indications available for the downscale condition.

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

Question 70 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:	993139																																						
User-Defined ID:	ILT-5063C-1A-001																																						
Cross Reference Number:	272000 K1.12/2.3.5																																						
Topic:	ILT-5063-3a-001																																						
Num Field 1:	2015 NRC																																						
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)(11)</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th colspan="3">Source Documentation</th> </tr> </thead> <tbody> <tr> <td>Source:</td> <td>New Exam item Modified Bank XILT Exam Bank</td> <td>Previous NRC Exam Other Exam Bank</td> </tr> <tr> <td>Reference(s):</td> <td colspan="2">PLOT5063; ARC-003 B-5</td> </tr> <tr> <td>Learning Objective:</td> <td colspan="2">PLOT-5063C-3a</td> </tr> <tr> <td>K/A System:</td> <td>2.3 Radiation Control</td> <td>Importance: RO / SRO 2.9/ 2.9</td> </tr> <tr> <td>K/A Statement:</td> <td colspan="2">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="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)(11)	Source Documentation			Source:	New Exam item Modified Bank XILT Exam Bank	Previous NRC Exam Other Exam Bank	Reference(s):	PLOT5063; ARC-003 B-5		Learning Objective:	PLOT-5063C-3a		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	
Psychometrics																																							
Level of Knowledge	Difficulty	Time Allowance (minutes)	RO																																				
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Reference(s):	PLOT5063; ARC-003 B-5																																						
Learning Objective:	PLOT-5063C-3a																																						
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																																						

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

71

ID: 1119616

Points: 1.00

- An Equipment Operator has been assigned to enter the Moisture Separator Area to investigate a steam leak
- The Equipment Operator has 1800 mR TEDE annual exposure to date
- Expected dose for investigation of the steam leak is 300 mR

In accordance with RP-AA-203, "Exposure Control and Authorization", which one of the following describes the action required, if any, to complete the steam leak investigation based on the above conditions?

- A. Planned Special Exposure must be obtained.
- B. Dose Control Level Extension must be obtained.
- C. Emergency Exposure Extension must be obtained.
- D. No action required because the Equipment Operator's total exposure will be less than 4000 mR.

Answer: B

Answer Explanation		
Choice		Basis or Justification
Correct:	B	Per RP-AA-203 requires dose extension above 2000 mR TEDE. Dose extensions are granted in 500 mR increments.
Distractors:	A	Incorrect - RP-AA-203 requires dose extension above 2000 mR TEDE. Dose extensions are granted in 500 mR increments. This evolution does not qualify as a Planned Special Exposure or Emergency Exposure Extension. Plausible if the candidate is not familiar with the radiation exposure limits.
	C	Incorrect - RP-AA-203 requires dose extension above 2000 mR TEDE. Dose extensions are granted in 500 mR increments. This evolution does not qualify as a Planned Special Exposure or Emergency Exposure Extension. Plausible if the candidate is not familiar with the radiation exposure limits.
	D	Incorrect - RP-AA-203 requires dose extension above 2000 mR TEDE. Dose extensions are granted in 500 mR increments. This evolution does not qualify as a Planned Special Exposure or Emergency Exposure Extension. Plausible if the candidate is not familiar with the radiation exposure limits.

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

Question 71 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:	1119616																																														
User-Defined ID:	ILT-1730-4-003																																														
Cross Reference Number:	2.3.4																																														
Topic:	ILT-1730-4-003 Exposure control																																														
Num Field 1:	2015 NRC																																														
Num Field 2:	0.00																																														
Text Field:	ILT05-1 NRC Exam #72																																														
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Reference(s):	RP-AA-203, Exposure Control and Authorization																																														
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K/A System:	2.3 Radiation Control		Importance: RO / SRO 3.2/ 3.7																																												
K/A Statement:	2.3.4 - Knowledge of radiation exposure limits under normal and emergency conditions.																																														
REQUIRED MATERIALS:	None																																														
Notes and Comments:	None																																														

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

72

ID: 1104646

Points: 1.00

A loss of off-site power has occurred.

Per SE-11, "Loss of Off-site Power", who must be notified of the loss of off-site power and informed of Peach Bottom Station status.

- A. Nuclear Regulatory Commission
- B. Transmission System Operator
- C. Federal Energy Regulatory Commission
- D. Pennsylvania Bureau of Radiation Protection

Answer: B

Answer Explanation		
Choice		Basis or Justification
Correct:	B	Per SE-11 "Loss of Off-site Power" the Transmission System Operator should be informed of the loss of power and pertinent information that will assist him in restoring an outside power source to PBAPS. He should also be aware of any other degraded conditions at PBAPS.
Distractors:	A	Plausible if the candidate confuses SE-11 requirements with EP notification requirements.
	C	Plausible if the candidate confuses SE-11 requirements with EP notification requirements.
	D	Plausible if the candidate confuses SE-11 requirements with FERC notification requirements.

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

Question 72 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:	1104646																																														
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Cross Reference Number:	2.4.30																																														
Topic:	ILT-1555-5-001																																														
Num Field 1:	2015 NRC																																														
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Reference(s):	SE-11																																														
Learning Objective:	PLOT-1555-5																																														
K/A System:	2.4 Emergency Procedures		Importance: RO / SRO 2.7/ 4.1																																												
K/A Statement:	2.4.30 - Knowledge of events related to system operation/status that must be reported to internal organizations or external agencies, such as the State, the NRC, or the transmission system operator.																																														
REQUIRED MATERIALS:	None																																														
Notes and Comments:	None																																														

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

73

ID: 1104651

Points: 1.00

- HPCI testing is in progress on Unit 2
- Unit 2 Torus temperature is 96 degrees F and rising

Based on the above information, choose the correct statement below.

T-102, "Primary Containment Control" shall _____.

- A. be entered. T-102 can be exited when it is determined that an emergency does not exist.
- B. be entered. T-102 can be exited only after Torus Temperature is less than 95 degrees F.
- C. NOT be entered. Per Technical Specifications, secure HPCI immediately.
- D. NOT be entered. Per Technical Specifications, secure HPCI when Torus temperature is 100 degrees F.

Answer: A

Answer Explanation		
Choice	Basis or Justification	
Correct:	A	Per the TRIP T-BAS (Intro); "HPCI testing can result in the occurrence of a T-102 high Torus temperature entry condition. Once it is determined that the elevated temperature is due only to the test in progress, T-102 may be exited, even if the Torus temperature is still above the entry condition setting.
Distractors:	B	Plausible if the candidate is not familiar with the Trip implementation procedure and believes that Torus temperature must be returned below the entry condition before T-102 can be exited.
	C	Plausible if the candidate is not familiar with the Trip implementation procedure. The Tech Spec requirement to secure any system adding heat to the torus is 105 degrees F.
	D	Plausible if the candidate is not familiar with the Trip implementation procedure. The Tech Spec requirement to secure any system adding heat to the torus is 105 degrees F.

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

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:	1104651																																														
User-Defined ID:																																															
Cross Reference Number:	2.4.14																																														
Topic:	ILT-1560-6-001																																														
Num Field 1:	2015 NRC																																														
Num Field 2:																																															
Text Field:																																															
Comments:	<table border="1"> <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> <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="2"> <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> <td></td> </tr> <tr> <td>Reference(s):</td> <td colspan="3">T-BAS Introduction to TRIP and SAMP Bases</td> </tr> <tr> <td>Learning Objective:</td> <td colspan="3">PLOT-1560-6</td> </tr> <tr> <td>K/A System:</td> <td>2.4 Emergency Procedures/Plan</td> <td colspan="2">Importance: RO / SRO 3.8/ 4.5</td> </tr> <tr> <td>K/A Statement:</td> <td colspan="3">2.4.14 - Knowledge of general guidelines for EOP usage</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> </table>			Psychometrics				Level of Knowledge	Difficulty	Time Allowance (minutes)	RO	MEMORY			10CRF55.41(b)(10)	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-BAS Introduction to TRIP and SAMP Bases			Learning Objective:	PLOT-1560-6			K/A System:	2.4 Emergency Procedures/Plan	Importance: RO / SRO 3.8/ 4.5		K/A Statement:	2.4.14 - Knowledge of general guidelines for EOP usage			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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Reference(s):	T-BAS Introduction to TRIP and SAMP Bases																																														
Learning Objective:	PLOT-1560-6																																														
K/A System:	2.4 Emergency Procedures/Plan	Importance: RO / SRO 3.8/ 4.5																																													
K/A Statement:	2.4.14 - Knowledge of general guidelines for EOP usage																																														
REQUIRED MATERIALS:	None																																														
Notes and Comments:	None																																														

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

74

ID: 1104709

Points: 1.00

Prior to a startup on Unit 3 the following Wide Range Neutron Monitor (WRNM) readings are recorded in GP-2, "Normal Startup":

WRNM A 20 WRNM C 25 WRNM E 20 WRNM G 28
WRNM B 25 WRNM D 30 WRNM F 27 WRNM H 30

Per GP-2 guidance the operator can expect criticality between ____ (1) ____ cps and ____ (2) ____ cps.

- A. (1) 2,560
 (2) 10,240
- B. (1) 2,560
 (2) 15,360
- C. (1) 3,840
 (2) 10,240
- D. (1) 3,840
 (2) 15,360

Answer: B

Answer Explanation		
Choice		Basis or Justification
Correct:	B	Startup procedure GP-2 states that the reactor should go critical between 7 and 9 doublings of the lowest and highest count rates respectively.
Distractors:	A	Plausible if the the candidate does not recall that 7 to 9 doubling rule in GP-2 or doesn't remember that it is the lowest and highest count rates used to determine the values.
	C	Plausible if the the candidate does not recall that 7 to 9 doubling rule in GP-2 or doesn't remember that it is the lowest and highest count rates used to determine the values.
	D	Plausible if the the candidate does not recall that 7 to 9 doubling rule in GP-2 or doesn't remember that it is the lowest and highest count rates used to determine the values.

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

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:	1104709																																														
User-Defined ID:																																															
Cross Reference Number:	2.2.1																																														
Topic:	ILT-1530-5-001																																														
Num Field 1:	2015 NRC																																														
Num Field 2:																																															
Text Field:																																															
Comments:	<table border="1"> <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> <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="2"> <input checked="" type="checkbox"/> New Exam item <input type="checkbox"/> Modified Bank <input type="checkbox"/> ILT Exam Bank </td> <td> <input type="checkbox"/> Previous NRC Exam <input type="checkbox"/> Other Exam Bank </td> </tr> <tr> <td>Reference(s):</td> <td colspan="3">GP-2</td> </tr> <tr> <td>Learning Objective:</td> <td colspan="3">PLOT-1530-5</td> </tr> <tr> <td>K/A System:</td> <td colspan="2">2.2 Equipment Control</td> <td>Importance: RO / SRO 4.5/ 4.4</td> </tr> <tr> <td>K/A Statement:</td> <td colspan="3">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 colspan="3">None</td> </tr> <tr> <td>Notes and Comments:</td> <td colspan="3">None</td> </tr> </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"/> ILT Exam Bank		<input type="checkbox"/> Previous NRC Exam <input type="checkbox"/> Other Exam Bank	Reference(s):	GP-2			Learning Objective:	PLOT-1530-5			K/A System:	2.2 Equipment Control		Importance: RO / SRO 4.5/ 4.4	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:	None		
Psychometrics																																															
Level of Knowledge	Difficulty	Time Allowance (minutes)	RO																																												
HIGH			10CRF55.41(b)(10)																																												
Source Documentation																																															
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Learning Objective:	PLOT-1530-5																																														
K/A System:	2.2 Equipment Control		Importance: RO / SRO 4.5/ 4.4																																												
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:	None																																														

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

75

ID: 1118810

Points: 1.00

A Unit 2 Reactor Operator position turnover has been completed.

In accordance with OP-AA-112-101, "Shift Turnover and Relief", the on-coming Reactor Operator is required to announce shift turnover and relief to:

- A. Shift Manager
- B. Unit Supervisor
- C. The Plant Reactor Operator
- D. The entire shift crew

Answer: B

Answer Explanation		
Choice		Basis or Justification
Correct:	B	Per OP-AA-112-101 "Shift Turnover and Relief", section 4.8 "Reactor Operator Shift Turnover Responsibilities", after relief, the on-coming Reactor Operator should announce shift turnover and relief to the Unit Supervisor.
Distractors:	A	Incorrect - After relief, the on-coming Reactor Operator should announce shift turnover and relief to the Unit Supervisor
	C	Incorrect - After relief, the on-coming Reactro Operator should announce shift turnover and relief to the Unit Supervisor
	D	Incorrect - After relief, the on-coming Reactor Operator should announce shift turnover and relief to the Unit Supervisor

EXAMINATION ANSWER KEY

2015 NRC Reactor Operator Exam - Revision 0

Question 75 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:	1118810																																														
User-Defined ID:	ILT-1529-1D-008																																														
Cross Reference Number:	2.1.3																																														
Topic:	ILT-1529-1d-008 Turnover																																														
Num Field 1:	2015 NRC																																														
Num Field 2:	N/A																																														
Text Field:	B																																														
Comments:	<table border="1"> <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> <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="2"> <input checked="" type="checkbox"/> New Exam item <input type="checkbox"/> Modified Bank <input type="checkbox"/> ILT Exam Bank </td> <td> <input type="checkbox"/> Previous NRC Exam <input type="checkbox"/> Other Exam Bank </td> </tr> <tr> <td>Reference(s):</td> <td colspan="3">OP-AA-112-101</td> </tr> <tr> <td>Learning Objective:</td> <td colspan="3">PLOT-1529-1d</td> </tr> <tr> <td>K/A System:</td> <td colspan="2">2.1 Conduct of Operations</td> <td>Importance: RO / SRO 3.7/ 3.9</td> </tr> <tr> <td>K/A Statement:</td> <td colspan="3">2.1.3 - Knowledge of shift or short-term relief turnover practice.</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> </table>			Psychometrics				Level of Knowledge	Difficulty	Time Allowance (minutes)	RO	MEMORY			10CRF55.41(b)(10)	Source Documentation				Source:	<input checked="" type="checkbox"/> New Exam item <input type="checkbox"/> Modified Bank <input type="checkbox"/> ILT Exam Bank		<input type="checkbox"/> Previous NRC Exam <input type="checkbox"/> Other Exam Bank	Reference(s):	OP-AA-112-101			Learning Objective:	PLOT-1529-1d			K/A System:	2.1 Conduct of Operations		Importance: RO / SRO 3.7/ 3.9	K/A Statement:	2.1.3 - Knowledge of shift or short-term relief turnover practice.			REQUIRED MATERIALS:	None			Notes and Comments:	None		
Psychometrics																																															
Level of Knowledge	Difficulty	Time Allowance (minutes)	RO																																												
MEMORY			10CRF55.41(b)(10)																																												
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K/A Statement:	2.1.3 - Knowledge of shift or short-term relief turnover practice.																																														
REQUIRED MATERIALS:	None																																														
Notes and Comments:	None																																														

EXAMINATION ANSWER KEY

2015 NRC Senior Reactor Operator Exam - Revision 0

1

ID: 994708

Points: 1.00

- A fire in the Main Control Room on the Unit 2 side results in entry into SE-10 "Alternative Shutdown".
- Immediate operator actions are taken and control of both units is established at the Alternative Shutdown (ASD) Panels.
- When the operator responded to the ASD panel they noted that HPCI auto started on low Reactor Pressure Vessel (RPV) level.

Which one of the following describes the required procedural actions the crew should take to control RPV water level?

- A. Utilize SE-10 for directions to control RPV level.
Do NOT enter T-101 "RPV Control".
- B. Utilize SE-10 for directions to control RPV level.
Enter T-101 "RPV Control" and perform concurrently.
- C. Utilize SE-10 for directions to control RPV level.
Enter T-101 "RPV Control", RC/L only.
- D. Exit SE-10 for directions to control RPV level.
Enter T-101 "RPV Control", RC/L only.

Answer: A

Answer Explanation		
Choice		Basis or Justification
Correct:	A	In order to maintain configuration control and avoid conflicting guidance, the SE-10 Bases directs that the use of the TRIP procedures be suspended once SE-10 is entered. SE-10 shall be utilized and T-101 shall not be entered.
Distractors:	B	Plausible if the candidate does not recall the requirement to execute SE-10 exclusively.
	C	Plausible if the candidate does not recall the requirement to execute SE-10 exclusively.
	D	Plausible if the candidate does not recall the requirement to execute SE-10 exclusively.

EXAMINATION ANSWER KEY

2015 NRC Senior Reactor Operator Exam - Revision 0

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:	994708																																														
User-Defined ID:	ILT15557003SE10T101																																														
Cross Reference Number:	295016 2.2.14																																														
Topic:	ILT-1555-7-003-SRO-SE10																																														
Num Field 1:	2015 NRC																																														
Num Field 2:																																															
Text Field:																																															
Comments:	<table border="1"> <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> <tr> <td>HIGH</td> <td></td> <td></td> <td>10CRF55.43(b)(5)</td> </tr> <tr> <th colspan="4">Source Documentation</th> </tr> <tr> <td>Source:</td> <td colspan="2">New Exam item Modified Bank XILT Exam Bank</td> <td>Previous NRC Exam Other Exam Bank</td> </tr> <tr> <td>Reference(s):</td> <td colspan="3">SE-10 Bases, T-101 Bases</td> </tr> <tr> <td>Learning Objective:</td> <td colspan="3">PLOT 1555-7</td> </tr> <tr> <td>K/A System:</td> <td>295016 Control Room Abandonment</td> <td colspan="2">Importance: RO / SRO 4.3/ 4.4</td> </tr> <tr> <td>K/A Statement:</td> <td colspan="3">2.1.23 - Ability to perform specific system and integrated plant procedures during all mode of plant 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> </table>			Psychometrics				Level of Knowledge	Difficulty	Time Allowance (minutes)	RO	HIGH			10CRF55.43(b)(5)	Source Documentation				Source:	New Exam item Modified Bank XILT Exam Bank		Previous NRC Exam Other Exam Bank	Reference(s):	SE-10 Bases, T-101 Bases			Learning Objective:	PLOT 1555-7			K/A System:	295016 Control Room Abandonment	Importance: RO / SRO 4.3/ 4.4		K/A Statement:	2.1.23 - Ability to perform specific system and integrated plant procedures during all mode of plant operation.			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):	SE-10 Bases, T-101 Bases																																														
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K/A Statement:	2.1.23 - Ability to perform specific system and integrated plant procedures during all mode of plant operation.																																														
REQUIRED MATERIALS:	None																																														
Notes and Comments:	None																																														

EXAMINATION ANSWER KEY

2015 NRC Senior Reactor Operator Exam - Revision 0

2

ID: 1109936

Points: 1.00

- Unit 3 is at 85% power with a reactor startup in-progress.
- AO-3-02-80A "Inboard MSIV" closes.

Based on the above, reactor pressure will ____ (1) ____ and the crew shall ____ (2) ____.

- A. (1) rise
(2) enter OT-102, "Reactor High Pressure" and reduce Reactor Power until Total Steam Flow to less than 10.8 Mlbs/hr.
- B. (1) rise
(2) enter OT-102, "Reactor High Pressure" and reduce Reactor Power until Total Steam Flow to less than 12.2 Mlbs/hr.
- C. (1) remain the same
(2) continue the GP-2, "Normal Plant Startup to 95%.
- D. (1) remain the same
(2) maintain Reactor power until the MSIV can be re-opened using SO 1A.7.B-3, "Main Steam Line Recovery"

Answer: A

Answer Explanation		
Choice		Basis or Justification
Correct:	A	Reactor power of 85% is higher than three main steam lines can pass and will result in RPV pressure rising. The rise in RPV pressure from 85% is enough for an operator to enter OT-102. The followup action in OT-102 is lower Reactor power low enough to re-establish the margin to the Main Steam Line high flow isolation. Reducing total steam flow to 10.8 Mlbs/hr ensures that each steam line flow is reduced back to maintaining the maximum individual value of 3.6 Mlbs/hr.
Distractors:	B	Plausible if the candidate believe that the value was adjusted for EPU. EPU Implementation does not change the values listed in the chart above for the number of unisolated steam lines because the safety analyses only supports Main Steam Line isolation at a power level of up to 75% of 3514 MWt (2635.5 MWt). understand the response time from 85% power.
	C	Plausible if the candidate does not understand that three Main Steam lines cannot support 85% reactor power without reactor pressure rising.
	D	Plausible if the candidate does not understand that three Main Steam lines cannot support 85% reactor power without reactor pressure rising.

EXAMINATION ANSWER KEY

2015 NRC Senior Reactor Operator Exam - Revision 0

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:	1.00																																														
System ID:	1109936																																														
User-Defined ID:																																															
Cross Reference Number:	295020AA2.04																																														
Topic:	ILT-5007G-5g-001																																														
Num Field 1:	2015 NRC																																														
Num Field 2:																																															
Text Field:																																															
Comments:	<table border="1"> <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> <tr> <td>HIGH</td> <td></td> <td></td> <td>10CRF55.41(b)(5)</td> </tr> <tr> <th colspan="4">Source Documentation</th> </tr> <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> <td> <input type="checkbox"/> Previous NRC Exam <input type="checkbox"/> Other Exam Bank </td> </tr> <tr> <td>Reference(s):</td> <td colspan="3">OT-102</td> </tr> <tr> <td>Learning Objective:</td> <td colspan="3">PLOT 5007G-5g-001</td> </tr> <tr> <td>K/A System:</td> <td colspan="2">295020 Inadvertent Containment Isolation</td> <td>Importance: RO / SRO 3.9 / 3.9</td> </tr> <tr> <td>K/A Statement:</td> <td colspan="3">AA2.04 - Ability to determine and/or interpret the following as they apply to INADVERTENT CONTAINMENT ISOLATION: 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> </table>			Psychometrics				Level of Knowledge	Difficulty	Time Allowance (minutes)	RO	HIGH			10CRF55.41(b)(5)	Source Documentation				Source:	<input checked="" type="checkbox"/> New Exam item <input type="checkbox"/> Modified Bank <input type="checkbox"/> ILT Exam Bank		<input type="checkbox"/> Previous NRC Exam <input type="checkbox"/> Other Exam Bank	Reference(s):	OT-102			Learning Objective:	PLOT 5007G-5g-001			K/A System:	295020 Inadvertent Containment Isolation		Importance: RO / SRO 3.9 / 3.9	K/A Statement:	AA2.04 - Ability to determine and/or interpret the following as they apply to INADVERTENT CONTAINMENT ISOLATION: Reactor pressure			REQUIRED MATERIALS:	None			Notes and Comments:	None		
Psychometrics																																															
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Learning Objective:	PLOT 5007G-5g-001																																														
K/A System:	295020 Inadvertent Containment Isolation		Importance: RO / SRO 3.9 / 3.9																																												
K/A Statement:	AA2.04 - Ability to determine and/or interpret the following as they apply to INADVERTENT CONTAINMENT ISOLATION: Reactor pressure																																														
REQUIRED MATERIALS:	None																																														
Notes and Comments:	None																																														

EXAMINATION ANSWER KEY

2015 NRC Senior Reactor Operator Exam - Revision 0

3

ID: 994782

Points: 1.00

The following conditions exist on Unit 3:

- The crew is executing procedure T-111 "Level Restoration"
- An emergency depressurization is in progress with 5 SRVs open
- RPV level is -190 inches and slowly lowering
- RPV pressure is 550 psig and slowly lowering
- The 3A Core Spray pump is the only available source of injection

Based on these conditions, Adequate Core Cooling (ACC) is (1) maintained and the Control Room Supervisor should (2).

- A. (1) being
(2) continue to execute T-111, "Level Restoration"
- B. (1) being
(2) exit T-111, "Level Restoration" and enter and execute T-101, "RPV Control"
- C. (1) NOT being
(2) continue efforts to restore ACC via submergence using T-111, "Level Restoration"
- D. (1) NOT being
(2) exit T-111, "Level Restoration" and enter and execute the SAMPs

Answer: A

Answer Explanation		
Correct:	A	When RPV water level cannot be maintained above the top of active fuel TAF (-172 inches), adequate steam flow (cooling) is established by maintaining RPV water level above the Minimum Steam Cooling RPV Water Level (-195 inches), as long as RPV pressure is above the Minimum Steam Cooling Pressure (270 psig with 5 SRVs open). Operation should continue until RPV level is recovered or until a decision is made that ACC is no longer assured then the evaluation to go to SAMPs would be made.
Distractors:	B	ACC is being maintained but since RPV level is not recovered above TAF, T-101 is not entered. Plausible if the candidate does not understand the requirement to stay in T-111 until RPV level is recovered above TAF.
	C	Plausible if the candidate does not recognize that the conditions for steam cooling are met.
	D	Plausible if the candidate does not recognize that the conditions for steam cooling are met. Plausible if the candidate believes that ACC is not met and that the entry into SAMPs is required.

EXAMINATION ANSWER KEY

2015 NRC Senior Reactor Operator Exam - Revision 0

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:	994782																																														
User-Defined ID:	ILT-2111-4-002																																														
Cross Reference Number:	295031 EA2.04																																														
Topic:	ILT-2111-4-003																																														
Num Field 1:	2015 NRC																																														
Num Field 2:																																															
Text Field:	NRC-09-1																																														
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REQUIRED MATERIALS:	None																																														
Notes and Comments:	None																																														

EXAMINATION ANSWER KEY

2015 NRC Senior Reactor Operator Exam - Revision 0

4

ID: 1110315

Points: 1.00

Unit 2 is in a refueling outage. The following conditions exist:

- The reactor is in Mode 4
- The "B" loop of RHR is blocked for maintenance
- The "B" loop of Core Spray is blocked for Maintenance
- The Condensate and Feedwater systems are drained for feedwater heater replacement
- The "A" RHR pump is in service for Shutdown Cooling
- The "A" Core Spray loop is available for injection
- Maintenance has a Work Order activity to lower Torus level to 10 feet.

Maintenance ____ (1) ____ proceed with the activity.

The "A" loop of Core Spray ____ (2) ____ "Protected Equipment" per OP-AA-108-117, "Protected Equipment Program".

- A. (1) can
(2) is
- B. (1) can
(2) is not
- C. (1) can not
(2) is
- D. (1) can not
(2) is not

Answer: C

Answer Explanation		
Choice		Basis or Justification
Correct:	C	Lowering Torus level to 10 feet will INOP Core Spray and RHR. Core Spray and RHR are the Tech Spec required injection system in Mode 4. For this reason maintenance can not continue with their activity. Per OP-AA-108-117 section 4.2 Core Spray would be protected equipment.
Distractors:	A	Plausible if the candidate does not understand that lowering Torus level to 10 feet will INOP ECCS due to exceeding the vortex limit.
	B	Plausible if the candidate does not understand that lowering Torus level to 10 feet will INOP ECCS due to exceeding the vortex limit. Plausible if the candidate does not understand the requirements to protect SSC equipment.
	D	Plausible if the candidate does not understand the requirements to protect SSC equipment.

EXAMINATION ANSWER KEY

2015 NRC Senior Reactor Operator Exam - Revision 0

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:	1110315																																														
User-Defined ID:																																															
Cross Reference Number:	295030 2.2.18																																														
Topic:	ILT-1529-1r-001-SRO																																														
Num Field 1:																																															
Num Field 2:																																															
Text Field:																																															
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REQUIRED MATERIALS:	None																																														
Notes and Comments:	None																																														

EXAMINATION ANSWER KEY

2015 NRC Senior Reactor Operator Exam - Revision 0

5

ID: 994310

Points: 1.00

- Unit 3 is at 25% power
- An explosion ruptures several Instrument Air lines in the turbine building
- All available air compressors are running
- Instrument Air pressure is 65 psig and lowering.
- Scram Air header pressure is 45 psig. Control rods begin to drift in

In accordance with ON-119 "Loss of Instrument Air", for the above conditions, the crew must scram and use _____ to control RPV level.

- A. Feedwater per procedure T-100 "Scram".
- B. HPCI and/or RCIC per procedure T-100 "Scram".
- C. Feedwater per procedure T-101 "RPV Control".
- D. HPCI and/or RCIC per procedure T-101 "RPV Control".

Answer: B

Answer Explanation		
Choice		Basis or Justification
Correct:	B	ON-119 directs entry into T-100. Without an air supply the outboard MSIVs will close. HPCI/ RCIC are the systems available to supply water to the RPV when the MSIVs are closed.
Distractors:	A	Plausible if the candidate does not recall that a loss of instrument air will cause the MSIVs to go closed and remove Feedwater as an injection source.
	C	Plausible if the candidate does not recall that ON-119 requires entry into T-100 not T-101. Plausible if the candidate does not recall that a loss of instrument air will cause the MSIVs to go closed and remove Feedwater as an injection source.
	D	Plausible if the candidate does not recall that ON-119 requires entry into T-100 not T-101.

EXAMINATION ANSWER KEY

2015 NRC Senior Reactor Operator Exam - Revision 0

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:	994310																																														
User-Defined ID:																																															
Cross Reference Number:	295019 2.1.20																																														
Topic:	ILT-1550-22C-002-SRO																																														
Num Field 1:	2015 NRC																																														
Num Field 2:	0.00																																														
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K/A System:	295019 Partial or Complete Loss of Instrument Air		Importance: RO / SRO 4.6/ 4.6																																												
K/A Statement:	2.1.20 - Ability to interpret and execute procedure steps.																																														
REQUIRED MATERIALS:	None																																														
Notes and Comments:	None																																														

EXAMINATION ANSWER KEY

2015 NRC Senior Reactor Operator Exam - Revision 0

6

ID: 993503

Points: 1.00

Unit 2 and Unit 3 are at full power with all systems operable and in their normal full power lineup.

The E42 Bus was de-energized to allow for emergent repair of a hot spot that had developed in a bus connection.

How long can this bus remain de-energized before a Technical Specification condition is entered that requires shutdown of Unit 2?

- A. 2 hours
- B. 8 hours
- C. 12 hours
- D. 7 days

Answer: B

Answer Explanation		
Choice		Basis or Justification
Correct:	B	The E-42 bus is one of the required Unit 2 electrical power distribution subsystems require by Tech Spec section 3.8.7, Distribution System - Operable. With one Unit 2 AC electrical power distribution subsystem inoperable, power must be restored to operable status in 8 hours. (3.8.7.C)
Distractors:	A	Plausible if the candidate does not understand that the E-42 bus is on of the required Unit 2 AC subsystems.
	C	Plausible if the candidate does not understand that the E-42 bus is on of the required Unit 2 AC subsystems.
	D	Plausible if the candidate does not understand that the E-42 bus is on of the required Unit 2 AC subsystems.

EXAMINATION ANSWER KEY

2015 NRC Senior Reactor Operator Exam - Revision 0

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:	993503																																														
User-Defined ID:																																															
Cross Reference Number:	295003 AA2.02																																														
Topic:	ILT-5054-002 TS - de-energize 4 KV bus																																														
Num Field 1:	2015 NRC																																														
Num Field 2:	NA																																														
Text Field:	B																																														
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REQUIRED MATERIALS:	Tech Spec 3.8																																														
Notes and Comments:	None																																														

EXAMINATION ANSWER KEY

2015 NRC Senior Reactor Operator Exam - Revision 0

7

ID: 1006403

Points: 1.00

The following conditions exist on Unit 3:

- TBCCW pumps have been tripped due to a system leak
- Reactor power has been lowered to 58% using procedure GP-9-2 "Fast Reactor Power Reduction"
- The following Condensate Pump related computer points are in alarm:
 - W018 indicates 193 degrees F
 - W019 indicates 176 degrees F
 - W022 indicates 183 degrees F
 - W023 indicates 190 degrees F
 - W026 indicates 191 degrees F
 - W027 indicates 182 degrees F

Portions of ON-118 "Loss of TBCCW" are PROVIDED BELOW AND ON THE NEXT PAGE:

- 2.1 IF ANY component must be removed from service OR trips AND the loss of this component makes a Unit trip likely, THEN **PERFORM** GP-4, "Manual Reactor Scram", concurrently with this procedure.
- 2.8 IF any of the following conditions occur, THEN **REDUCE** reactor power in accordance with GP-9-2(3), "Fast Reactor Power Reduction", AND **REMOVE** the affected pump(s) from service.
- 2.8.1 Any Condensate Pump thrust bearing temperature at OR above 190 F.
- 2.8.2 Any Condensate Pump or motor bearing temperature at OR above 190 F.
- 2.8.3 Any Condensate Pump vibration exceeding the alarm setpoint.

EXAMINATION ANSWER KEY

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TABLE 1

CONDENSATE PUMP/MOTOR THRUST BEARING TEMPERATURE POINTS

<u>COMPUTER POINT (°F)</u>	<u>POINT ID</u>	<u>ALARM</u>
"A" CONDENSATE PUMP MOTOR THRUST BRG.	W018 (W318)	175°F (175°F)
"A" CONDENSATE PUMP THRUST BRG.	W019 (W319)	200°F (200°F)
"B" CONDENSATE PUMP MOTOR THRUST BRG.	W022 (W322)	175°F (175°F)
"B" CONDENSATE PUMP THRUST BRG.	W023 (W323)	200°F (200°F)
"C" CONDENSATE PUMP MOTOR THRUST BRG.	W026 (W326)	175°F (175°F)
"C" CONDENSATE PUMP THRUST BRG.	W027 (W327)	200°F (200°F)

Based on the above conditions, which one of the following is the correct course of action for these conditions?

- A. Further reduce power per GP-9-2 "Fast Reactor Power Reduction" and remove the 2A and 2C Condensate Pumps from service ONLY.
- B. Further reduce power per GP-9-2 "Fast Reactor Power Reduction" and remove ALL Condensate pumps from service.
- C. Perform GP-4 "Manual Reactor Scram" and remove the 2A and 2C Condensate pumps from service ONLY.
- D. Perform GP-4 "Manual Reactor Scram" and remove ALL Condensate Pumps from service.

Answer: D

Answer Explanation		
Choice		Basis or Justification
Correct:	D	Computer points W018, W023 and W026 show that the 2A, 2B and 2C condensate pumps must be removed from service since all have motor or thrust bearing temperature that are "at or above 190 degrees F". Since further power reduction using GP-9-2 cannot reduce power enough to remove ALL condensate pumps from service, a GP-4 manual scram is required. This is based on the guidance of ON-118 step 2.1 that directs a GP-4 manual scram if the loss of any component makes a unit trip likely.
Distractors:	A	All 3 condensate pumps have exceeded the temperature limit for continued operation and must be removed from service. Further power reduction using GP-9-2 will not reduce power enough to remove all condensate pumps from service. Therefore, a GP-4 manual scram is required.

EXAMINATION ANSWER KEY

2015 NRC Senior Reactor Operator Exam - Revision 0

	B	Further power reduction using GP-9-2 will not reduce power enough to remove all condensate pumps from service. Therefore, a GP-4 manual scram is required.
	C	All 3 condensate pumps have exceeded the temperature limit for continued operation and must be removed from service.

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																																														
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Psychometrics																																															
Level of Knowledge	Difficulty	Time Allowance (minutes)	SRO																																												
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K/A Statement: 2.1.19 – Ability to use plant computers to evaluate system or component status.																																															
REQUIRED MATERIALS:		NONE																																													
Notes and Comments:																																															

EXAMINATION ANSWER KEY

2015 NRC Senior Reactor Operator Exam - Revision 0

8

ID: 1120210

Points: 1.00

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

- An Equipment Operator reports a large steam break in the Unit 3 Reactor Building
- Annunciator 317 K-5, "Reac Bldg. Hi-Lo Diff Pressure" alarms
- Annunciator 317 L-1 "Reac Bldg. Refueling Area Hi-Lo Diff Press" alarms
- Reactor Building and Refuel Floor vent exhaust radiation readings are 1 mr/hr
- RPV level is -25 inches and steady
- The Shift Manager has declared a Site Area Emergency (SAE) for an Unisolable Main Steam Line break.

Based on the above conditions, Reactor Building pressure will be (1).

The Crew shall (2).

- A. (1) positive
(2) reduce Secondary Containment temperature/pressure using T-222, "Secondary Containment Ventilation Bypass per T-103, "Secondary Containment Control".
- B. (1) positive
(2) Depressurize the Reactor using ST-O-080-500, "Recording and Monitoring Reactor Vessel Temperatures and Pressure" per T-104, "Radioactivity Release".
- C. (1) negative
(2) reduce Secondary Containment temperature/pressure using T-222, "Secondary Containment Ventilation Bypass per T-103, "Secondary Containment Control".
- D. (1) negative
(2) Depressurize the Reactor using ST-O-080-500, "Recording and Monitoring Reactor Vessel Temperatures and Pressure" per T-104, "Radioactivity Release".

Answer: A

Answer Explanation		
Choice		Basis or Justification
Correct:	A	The Reactor Building will be positive with the report of a large steam break in the reactor building and the Hi-lo Differential pressure alarms. T-103 "Secondary Containment Control" must be entered out of the ARCs listed for the high Secondary Containment pressure condition. With low radiation levels, T-103 will drive performance of T-222 to restore RB ventilation and reduce RB temperature and pressure.
Distractors:	B	Plausible if the candidate confuses the T-104 entry based on a Radiation Release EAL and the declared EAL on a Main Steam Line Break. The action of performing a GP-4 shutdown is an action if radiation levels are above the EAL Alert level. The Shift Manager has declared a SAE. If the candidate does not understand that the declaration must be on radiation release the action for T-104 is plausible.

EXAMINATION ANSWER KEY

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C	Plausible if the candidate does not understand that the listed conditions will cause Reactor Building pressure to go positive. The Reactor Building will stay negative if a small steam leak occurs in the secondary containment however with the report of a steam line break the building will go positive. Additionally the annunciators received are for both a high or low differential pressure condition. The candidate must make the determination based on the rest of the conditions that the pressure would be high and not low.
D	<p>Plausible if the candidate does not understand that the listed conditions will cause Reactor Building pressure to go positive. The Reactor Building will stay negative if a small steam leak occurs in the secondary containment however with the report of a steam line break the building will go positive. Additionally the annunciators received are for both a high or low differential pressure condition. The candidate must make the determination based on the rest of the conditions that the pressure would be high and not low.</p> <p>Plausible if the candidate confuses the T-104 entry based on a Radiation Release EAL and the declared EAL on a Main Steam Line Break. The action of performing a GP-4 shutdown is an action if radiation levels are above the EAL Alert level. The Shift Manager has declared a SAE. If the candidate does not understand that the declaration must be on radiation release the action for T-104 is plausible.</p>

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:	1120210																												
User-Defined ID:	ILT-2103-1-006																												
Cross Reference Number:	295035EA2.01																												
Topic:	ILT-2103-2-008-SRO																												
Num Field 1:	2015 NRC																												
Num Field 2:	N/A																												
Text Field:	A																												
Comments:	<table><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><tr><td>HIGH</td><td></td><td></td><td>10CRF55.43(b)(5)</td></tr><tr><th colspan="4">Source Documentation</th></tr><tr><td>Source:</td><td colspan="2">XNew Exam item Modified Bank ILT Exam Bank</td><td>Previous NRC Exam Other Exam Bank</td></tr><tr><td>Reference(s):</td><td colspan="3">T-103, T-104, T-222</td></tr><tr><td>Learning Objective:</td><td colspan="3">PLOT-5009-2b</td></tr></table>	Psychometrics				Level of Knowledge	Difficulty	Time Allowance (minutes)	RO	HIGH			10CRF55.43(b)(5)	Source Documentation				Source:	XNew Exam item Modified Bank ILT Exam Bank		Previous NRC Exam Other Exam Bank	Reference(s):	T-103, T-104, T-222			Learning Objective:	PLOT-5009-2b		
Psychometrics																													
Level of Knowledge	Difficulty	Time Allowance (minutes)	RO																										
HIGH			10CRF55.43(b)(5)																										
Source Documentation																													
Source:	XNew Exam item Modified Bank ILT Exam Bank		Previous NRC Exam Other Exam Bank																										
Reference(s):	T-103, T-104, T-222																												
Learning Objective:	PLOT-5009-2b																												

EXAMINATION ANSWER KEY

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	K/A System:	295035 Secondary Containment High Differential Pressure	Importance: RO / SRO 3.8/ 3.9
	K/A Statement:	EA2.01 - Ability to determine and/or monitor the following as they apply to SECONDARY CONTAINMENT HIGH DIFFERENTIAL PRESSURE: Secondary containment pressure	
	REQUIRED MATERIALS:	None	
	Notes and Comments:	None	

EXAMINATION ANSWER KEY

2015 NRC Senior Reactor Operator Exam - Revision 0

9

ID: 1109846

Points: 1.00

Unit 2 has been at 100% power for 300 days. The following conditions exist:

- Fuel bundles are being moved in the Unit 2 fuel pool in preparation for loading of an ISFSI cask
- ST-O-09A-325-2, "Standby Gas Treatment (SBGT) Subsystem Operability Test" is in progress when the "A" SBGT Fan runs for 10 minutes and then trips on overcurrent

For the above conditions, (1) What is the Technical Specification required action?

Per the Technical Specification bases, the SBGT System is needed to mitigate the consequences
____(2)_____.

- A. (1) Suspend movement of fuel bundles in the Fuel Pool.
(2) of a Fuel Handling Accident.
- B. (1) Place the "B" SBGT fan in service immediately.
(2) of a Fuel Handling Accident.
- C. (1) Place the "B" SBGT fan in service immediately.
(2) from a radiation release caused by a DBA LOCA.
- D. (1) Restore SBGT subsystem to operable in 7 days.
(2) from a radiation release caused by a DBA LOCA.

Answer: D

Answer Explanation		
Choice		Basis or Justification
Correct:	D	The "A" SBGT fan tripping in 10 minutes is a failed "black box" step on the ST. This means that one subsystem is inoperable. One inoperable subsystem requires that subsystem be returned to service within 7 days.
Distractors:	A	There is no recently irradiated fuel in the fuel pool because the unit has been on line for 300 days. Termination of fuel moves is not required. Plausible if the candidate does not recall the definition of "Recently Irradiated".
	B	There is no recently irradiated fuel in the fuel pool because the unit has been on line for 300 days. Placing SBGT in-service as an option to continue fuel moves is not required. Plausible if the candidate does not recall the definition of "Recently Irradiated".
	C	Placing the SBGT train in-service is only required after the 7 day window to return the system to service has expired. Plausible if the candidate does not understand the Tech Spec.

EXAMINATION ANSWER KEY

2015 NRC Senior Reactor Operator Exam - Revision 0

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:	1109846																																														
User-Defined ID:																																															
Cross Reference Number:	295017 2.2.12																																														
Topic:	ILT-5009A-14-001-SRO																																														
Num Field 1:	2015 NRC																																														
Num Field 2:																																															
Text Field:																																															
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Psychometrics																																															
Level of Knowledge	Difficulty	Time Allowance (minutes)	RO																																												
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Reference(s):	Tech Spec, ST-O-09A-325-2 SBGT Subsystem Operability Test																																														
Learning Objective:	PLOT-5009A-14																																														
K/A System:	295017 High Off-Site Release Rate	Importance: RO / SRO 3.7/ 4.1																																													
K/A Statement:	2.2.12 - Knowledge of surveillance procedures.																																														
REQUIRED MATERIALS:	1. Tech Spec section 3.6 (SBGT System) 2. ST-O-09A-325-2, "SBGT Subsystem Operability Test" page 6																																														
Notes and Comments:	None																																														

EXAMINATION ANSWER KEY

2015 NRC Senior Reactor Operator Exam - Revision 0

10

ID: 1110006

Points: 1.00

A automatic scram has occurred on Unit 3 due to a loss of Main Condenser vacuum. The following conditions exist:

- Reactor power is 3% and steady
- Fifty (50) control rods did not fully insert
- RPV level lowered to -35 inches and has recovered to -20 inches
- Main Condenser vacuum is 10 inches and getting worse
- Reactor Recirculation Pumps tripped on the Aux Bus fast transfer

Based on the above conditions there is an entry condition for procedure ____ (1) ____ and the Crew is required to ____ (2) ____.

- A. (1) T-100 "Scram"
(2) initiate Alternate Rod Insertion (ARI) using RRC 3B.1-3, "Alternate Rod Insertion During a Plant Event"
- B. (1) T-100 "Scram"
(2) minimize CRD flow using SO 3.2.A-3, "Control Rod Drive Hydraulic System Shutdown"
- C. (1) T-101 "RPV Control"
(2) initiate Alternate Rod Insertion (ARI) using RRC 3B.1-3, "Alternate Rod Insertion During a Plant Event"
- D. (1) T-101 "RPV Control"
(2) inject Standby Liquid Control (SLC) using RRC 11.1-3, "Standby Liquid System Initiation During a Plant Event"

Answer: A

Answer Explanation		
Choice		Basis or Justification
Correct:	A	No entry condition to T-101 "RPV Control" exists (Reactor power is less than 4% and RPV level did not go below - 48 inches). Entry into procedure T-100 "Scram" is required. Because there is an ATWS (not all rods inserted) T-100 directs Alternate Rod Insertion (ARI) be initiated.
Distractors:	B	CRD is needed for rod insertion. A prerequisite for use of the procedure is that all control rods are inserted. Plausible if the candidate does not recognize that CRD is needed to attempt rod insertion.
	C	No entry for T-101 exists. Plausible if the candidate does not recall the T-101 entry conditions. The action to initiate ARI is also a plausible action with an ATWS.
	D	No entry for T-101 exists. Plausible if the candidate does not recall the T-101 entry conditions. The action to inject SLC is also a plausible action with an ATWS.

EXAMINATION ANSWER KEY

2015 NRC Senior Reactor Operator Exam - Revision 0

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:	1.00																																														
System ID:	1110006																																														
User-Defined ID:																																															
Cross Reference Number:	295015 2.1.23																																														
Topic:	ILT-2100-3-012-SRO																																														
Num Field 1:																																															
Num Field 2:																																															
Text Field:																																															
Comments:	<table border="1"> <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> <tr> <td>HIGH</td> <td></td> <td></td> <td>10CRF55.43(b)(5)</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-100, T-101</td> </tr> <tr> <td>Learning Objective:</td> <td colspan="3">PLOT-2100-3</td> </tr> <tr> <td>K/A System:</td> <td colspan="2">295015 Incomplete SCRAM</td> <td>Importance: RO / SRO 4.3/ 4.4</td> </tr> <tr> <td>K/A Statement:</td> <td colspan="3">2.1.23 - Ability to perform specific system and integrated plant procedures during all modes of plant 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> </table>			Psychometrics				Level of Knowledge	Difficulty	Time Allowance (minutes)	RO	HIGH			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):	T-100, T-101			Learning Objective:	PLOT-2100-3			K/A System:	295015 Incomplete SCRAM		Importance: RO / SRO 4.3/ 4.4	K/A Statement:	2.1.23 - Ability to perform specific system and integrated plant procedures during all modes of plant operation.			REQUIRED MATERIALS:	None			Notes and Comments:	None		
Psychometrics																																															
Level of Knowledge	Difficulty	Time Allowance (minutes)	RO																																												
HIGH			10CRF55.43(b)(5)																																												
Source Documentation																																															
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Reference(s):	T-100, T-101																																														
Learning Objective:	PLOT-2100-3																																														
K/A System:	295015 Incomplete SCRAM		Importance: RO / SRO 4.3/ 4.4																																												
K/A Statement:	2.1.23 - Ability to perform specific system and integrated plant procedures during all modes of plant operation.																																														
REQUIRED MATERIALS:	None																																														
Notes and Comments:	None																																														

EXAMINATION ANSWER KEY

2015 NRC Senior Reactor Operator Exam - Revision 0

11

ID: 1109868

Points: 1.00

- Unit 2 is in MODE 2 with a reactor startup in progress
- The reactor is subcritical
- Control rod withdrawal has begun
- The 2B 24/48 VDC Distribution Panel (2BD045) is lost

The loss of power to 2BD045 causes a control rod block ____ (1) ____ from the Wide Range Neutron Monitoring (WRNM) System. The Crew shall ____ (2) ____.

- A. (1) ONLY
(2) bypass the Rod Block signal using AO 60C.1-2 "Bypassing WRNM Control Rod Withdraw Block" and continue the startup
- B. (1) ONLY
(2) suspend control rod withdrawal immediately per Technical Specifications
- C. (1) and RPS Channel 'B' Half Scram
(2) bypass the Rod Block signal using AO 60C.1-2 "Bypassing WRNM Control Rod Withdraw Block" and the Half Scram signal using GP-11.E "RPS Scram and ARI Reset" and continue the startup
- D. (1) and RPS Channel 'B' Half Scram
(2) suspend control rod withdrawal immediately per Technical Specifications

Answer: D

Answer Explanation		
Correct:	D	A loss of power to 2BD045 will result in a half scram and rod block due to a WRNM INOP condition caused by the loss of power to the 4 "B" channel WRNMs. With 4 WRNM channels INOP, Tech Specs required that control rod withdraw be suspended immediately.
Distractors:	A	Plausible if applicant does not understand the effects of a power loss on the WRNM system and believes the given conditions will only result in a rod block and does not understand that power has been lost to 3 required WRNMs. The startup can not continue until three of the four INOP WRNMs can be returned to service.
	B	Plausible if applicant does not understand the effects of a power loss on the WRNM system and believes the given conditions will only result in a rod block.
	C	Plausible if applicant does not understand the effects of a power loss on the WRNM system and does not understand that power has been lost to 3 required WRNMs. The startup can not continue until three of the four INOP WRNMs can be returned to service.

EXAMINATION ANSWER KEY

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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:	1109868																																														
User-Defined ID:	ILT-5060C-2C-001																																														
Cross Reference Number:	215004A2.01																																														
Topic:	ILT-5060C-2c-002-SRO																																														
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Num Field 2:																																															
Text Field:	NRC-09-1																																														
Comments:	<table border="1"> <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> <tr> <td>HIGH</td> <td></td> <td></td> <td>10CRF55.43(b)(5)</td> </tr> <tr> <th colspan="4">Source Documentation</th> </tr> <tr> <td>Source:</td> <td colspan="2"> <input type="checkbox"/> New Exam item <input checked="" type="checkbox"/> Modified Bank <input type="checkbox"/> ILT Exam Bank </td> <td> <input type="checkbox"/> Previous NRC Exam <input type="checkbox"/> Other Exam Bank </td> </tr> <tr> <td>Reference(s):</td> <td colspan="3">ARC-210 H-3, E-24,</td> </tr> <tr> <td>Learning Objective:</td> <td colspan="3">PLOT-5060C-2</td> </tr> <tr> <td>K/A System:</td> <td colspan="2">215004 Source Range Monitor (SRM) System</td> <td>Importance: RO / SRO 2.7/ 2.9</td> </tr> <tr> <td>K/A Statement:</td> <td colspan="3">A2.01 - Ability to (a) predict the impacts of the following on the SOURCE RANGE MONITOR (SRM) SYSTEM; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Power supply degraded</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> </table>			Psychometrics				Level of Knowledge	Difficulty	Time Allowance (minutes)	RO	HIGH			10CRF55.43(b)(5)	Source Documentation				Source:	<input type="checkbox"/> New Exam item <input checked="" type="checkbox"/> Modified Bank <input type="checkbox"/> ILT Exam Bank		<input type="checkbox"/> Previous NRC Exam <input type="checkbox"/> Other Exam Bank	Reference(s):	ARC-210 H-3, E-24,			Learning Objective:	PLOT-5060C-2			K/A System:	215004 Source Range Monitor (SRM) System		Importance: RO / SRO 2.7/ 2.9	K/A Statement:	A2.01 - Ability to (a) predict the impacts of the following on the SOURCE RANGE MONITOR (SRM) SYSTEM; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Power supply degraded			REQUIRED MATERIALS:	None			Notes and Comments:	None		
Psychometrics																																															
Level of Knowledge	Difficulty	Time Allowance (minutes)	RO																																												
HIGH			10CRF55.43(b)(5)																																												
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Reference(s):	ARC-210 H-3, E-24,																																														
Learning Objective:	PLOT-5060C-2																																														
K/A System:	215004 Source Range Monitor (SRM) System		Importance: RO / SRO 2.7/ 2.9																																												
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REQUIRED MATERIALS:	None																																														
Notes and Comments:	None																																														

EXAMINATION ANSWER KEY

2015 NRC Senior Reactor Operator Exam - Revision 0

12

ID: 1118714

Points: 1.00

The following alarms are received:

- 220 F-5, "INVERTER TROUBLE"
- 220 G-5, "INVERTER DC SUPPLY UNDERVOLTAGE"

Based on the above alarms, power will be (1) to Panel Y-50 "Uninterruptible 125 VAC Bus".
Enter and execute (2).

- A. (1) lost
(2) ON-112, "Loss of Uninterruptible AC Power" to stabilize RPV level.
- B. (1) lost
(2) SO 58B.7.A-2, "Removing Unit 2 U.P.S. Static Inverter From Service" to provide power directly from the AC source until power to the static inverter is restored.
- C. (1) maintained
(2) ON-112, "Loss of Uninterruptible AC Power" to stabilize RPV level.
- D. (1) maintained
(2) SO 58B.7.A-2, "Removing Unit 2 U.P.S. Static Inverter From Service" to provide power directly from the AC source until power to the static inverter is restored.

Answer: D

Answer Explanation		
Choice	Basis or Justification	
Correct:	D	The static switch is a "make before break" contact therefore power will be maintained to Y-50 when the normal supply is lost. ARC 220-F-5 and 220G-5 provides an option to perform SO 58B.7.A to remove the static inverter from service at the discretion of Shift Management.
Distractors:	A	Plausible if the candidate does not understand that the static switch will transfer on lowering DC voltage from the static inverter therefore maintaining power to Y-50. If the candidate believes that power will be lost to Y-50 then entry into ON-112 would be appropriate to stabilize RPV level.
	B	Plausible if the candidate does not understand that the static switch will transfer on lowering DC voltage from the static inverter therefore maintaining power to Y-50.
	C	A symptom for entry into ON-112 is alarm 220 F-5. With the transfer of power to the AC supply for Y-50 executing ON-112 to stabilize RPV level is not correct. Plausible if the candidate does not understand that ON procedure entry and execution without an actual loss of power to y-50 is not correct.

EXAMINATION ANSWER KEY

2015 NRC Senior Reactor Operator Exam - Revision 0

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:	1118714																																														
User-Defined ID:																																															
Cross Reference Number:	262002A2.01																																														
Topic:	ILT-1550-17b-003-SRO																																														
Num Field 1:	2015 NRC																																														
Num Field 2:																																															
Text Field:																																															
Comments:	<table border="1"> <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> <tr> <td>HIGH</td> <td></td> <td></td> <td>10CRF55.43(b)(5)</td> </tr> <tr> <th colspan="4">Source Documentation</th> </tr> <tr> <td>Source:</td> <td colspan="2"> <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> <td></td> </tr> <tr> <td>Reference(s):</td> <td colspan="3">ARCs 220 F-5 & G-5, E-28, PLOT 5058</td> </tr> <tr> <td>Learning Objective:</td> <td colspan="3">PLOT-1550-17b</td> </tr> <tr> <td>K/A System:</td> <td colspan="2">262002 Uninterruptable Power Supply</td> <td>Importance: RO / SRO 2.6/ 2.8</td> </tr> <tr> <td>K/A Statement:</td> <td colspan="3">A2.01 - Ability to (a) predict the impacts of the following on the UNINTERRUPTIBLE POWER SUPPLY (A.C./D.C.) and (b) based on those prediction, use produces to correct, control, or mitigate the consequences of those abnormal conditions or operations: Under 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> </table>			Psychometrics				Level of Knowledge	Difficulty	Time Allowance (minutes)	RO	HIGH			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):	ARCs 220 F-5 & G-5, E-28, PLOT 5058			Learning Objective:	PLOT-1550-17b			K/A System:	262002 Uninterruptable Power Supply		Importance: RO / SRO 2.6/ 2.8	K/A Statement:	A2.01 - Ability to (a) predict the impacts of the following on the UNINTERRUPTIBLE POWER SUPPLY (A.C./D.C.) and (b) based on those prediction, use produces to correct, control, or mitigate the consequences of those abnormal conditions or operations: Under voltage			REQUIRED MATERIALS:	None			Notes and Comments:	None		
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REQUIRED MATERIALS:	None																																														
Notes and Comments:	None																																														

EXAMINATION ANSWER KEY

2015 NRC Senior Reactor Operator Exam - Revision 0

13

ID: 1119457

Points: 1.00

Unit 2 was operating at 100% power. The following conditions exist:

- The "B" RHR loop is blocked and drained for repairs
- A loss of Off-Site power occurs
- The E-3 and E-4 Diesel Generators start and load their 4 KV buses
- RPV level is 23 inches being maintained by RCIC
- RPV pressure is 900 psig being maintained by HPCI in the CST-CST mode
- Off-site power is not expected to be restored for several hours
- A small steam leak occurs on Unit 2 requiring the use of containment sprays

Using the attached table select the correct statement with respect to the loss of Off-Site power.

↓

REVIEW THE PURPOSE AND PREREQUISITES OF THE APPLICABLE BACKFEED ATTACHMENT:	
<u>D/G COMBINATION</u>	<u>ATTACHMENT</u>
E1 & E2 AVAILABLE	D
E1 & E3 AVAILABLE	E
E1 & E4 AVAILABLE	F
E2 & E3 AVAILABLE	G
E2 & E4 AVAILABLE	H
E3 & E4 AVAILABLE	J

- C 5
- ↓
- A. Backfeed is not required, spray Containment using T-204-2, "Initiation of Containment Sprays Using RHR".
- B. Backfeed is required using Attachment J, "Backfeeding Safe Shutdown Loads With the E3 & E4 Diesel Generators Available".
- C. Backfeed is required using Attachment P, "Generic Load Management Contingency During Loop Events".
- D. Secure D/Gs using Attachment A, "Diesel Generator Lockout From the Main Control Room" until backfeed is available to E-22 bus to provide D/G cooling.

Answer: B

EXAMINATION ANSWER KEY

2015 NRC Senior Reactor Operator Exam - Revision 0

Answer Explanation		
Choice		Basis or Justification
Correct:	C	Power is not available to perform Containment Sprays and provide injection without performing a backfeed. Direction to implement the backfeed attachment is given by Shift Management.
Distractors:	A	Plausible if the candidate does not recognize the backfeed attachment needs to be performed because there is not sufficient power available to spray containment..
	B	Plausible if the candidate does not recognize that the normal back feed attachment is sufficient to restore power to containment spray valves.
	D	Plausible if the candidate does not understand the power supplies to the ESW and ECW pumps. With power to the E3 and E4 D/Gs cooling water is available to the D/Gs.

Question 13 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:	1119457			
User-Defined ID:				
Cross Reference Number:	264000 2.4.11			
Topic:	ILT-1555-3-023-SRO			
Num Field 1:	2015 NRC			
Num Field 2:				
Text Field:				
Comments:	Psychometrics			
	Level of Knowledge	Difficulty	Time Allowance (minutes)	RO
	HIGH			10CRF55.43(b)(5)
	Source Documentation			
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	Reference(s):	SE-11		
	Learning Objective:	PLOT 1555-3		
	K/A System:	264000 Emergency Generators		Importance: RO / SRO 4.0/ 4.2
	K/A Statement:	2.4.11 Knowledge of abnormal condition procedures.		

EXAMINATION ANSWER KEY

2015 NRC Senior Reactor Operator Exam - Revision 0

	REQUIRED MATERIALS:	None
	Notes and Comments:	None

EXAMINATION ANSWER KEY

2015 NRC Senior Reactor Operator Exam - Revision 0

14

ID: 1110320

Points: 1.00

- Unit 3 is at 100% power
- The "C" Safety Relief Valve (SRV) fails full open.
- EHC load set is at 105%.

Based on the above conditions, Main Turbine control valves will ____ (1) ____.
Direct the operator to ____ (2) ____.

- A. (1) close for 94% flow demand
(2) cycle the SRV control switch per OT-114 "Inadvertent Opening of a Relief Valve"
- B. (1) close for 94% flow demand
(2) scram the Reactor when Main Steam Line pressure approaches 880 psig per OT-111 "Reactor Low Pressure"
- C. (1) remain at 100% flow demand
(2) cycle the SRV control switch per OT-114 "Inadvertent Opening of a Relief Valve"
- D. (1) remain at 100% flow demand
(2) scram the Reactor when Main Steam Line pressure approaches 880 psig per OT-111 "Reactor Low Pressure"

Answer: A

Answer Explanation		
Choice	Basis or Justification	
Correct:	A	Output of pressure regulator lowers sending a lower signal to control valve demand. As control valves close (~6%) reactor pressure will remain constant offsetting the SRV being open. Since RPV pressure does not change OT-114 is the only procedure required to be entered. At the SRO's discretion the SRV control switch is cycled.
Distractors:	B	Plausible if the candidate does not understand how the pressure set section of EHC functions to control RPV pressure and believes that RPV pressure will lower. If pressure is lowering OT-111 "Reactor Low Pressure" would be entered. OT-111 would direct scrambling if MSL pressure approaches 880 psig. Plausible if the candidate believes that RPV pressure would drop.
	C	Plausible if the candidate does not understand how the pressure set section of EHC functions to control RPV pressure and believes that RPV pressure will not lower. Since RPV pressure does not change OT-114 is the only procedure required to be entered. At the SRO's discretion the SRV control switch is cycled.
	D	Plausible if the candidate does not understand how the pressure set section of EHC functions to control RPV pressure and believes that RPV pressure will lower. If pressure is lowering OT-111 "Reactor Low Pressure" would be entered. OT-111 would direct scrambling if MSL pressure approaches 880 psig. Plausible if the candidate believes that RPV pressure would drop.

EXAMINATION ANSWER KEY

2015 NRC Senior Reactor Operator Exam - Revision 0

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:	1110320																																														
User-Defined ID:	ILT-5001DL-6E-001																																														
Cross Reference Number:	241000 2.1.7																																														
Topic:	ILT-5001DL-7e-002-SRO SRV Fails open / EHC response																																														
Num Field 1:	2015																																														
Num Field 2:	N/A																																														
Text Field:	A																																														
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K/A Statement:	2.1.7 - Ability to evaluate plant performance and make operational judgements based on operating characteristics, reactor behavior, and instrument interpretation.																																														
REQUIRED MATERIALS:	None																																														
Notes and Comments:	None																																														

EXAMINATION ANSWER KEY

2015 NRC Senior Reactor Operator Exam - Revision 0

15

ID: 1120226

Points: 1.00

- Unit 2 is at 100% power
- RPV level is +23 inches and stable
- Digital Feedwater Control System (DFCS) is in three element control

Based on the above, which of the following describes the plant response to a loss of all feedwater flow signals to the DFCS?

When CONDITIONS STABILIZE, the Crew shall _____.

- A. maintain RFP suction pressure above 340 psig per OT-100, "Reactor Low Level" due to the RFP min flow valves failing open
- B. monitor for THI per OT-112, "Unexpected Unexplained Change in Core Flow" due to a 30% runback
- C. monitor for THI per OT-112, "Unexpected Unexplained Change in Core Flow" due to a 45% runback
- D. trip a RFP to maintain RPV level below the Main Steam Lines per OT-110, "Reactor High Level"

Answer: B

Answer Explanation		
Choice		Basis or Justification
Correct:	B	The loss of the Total Feedwater input will cause a 30% reactor recirculation system runback transient. OT-112 is required to be entered due to the recirc runback resulting in reduced reactor core flow. One of the early follow-up actions of OT-112 is to monitor for Thermal Hydraulic Instability.
Distractors:	A	Maintaining Reactor Feed Pump (RFP) suction pressure above 340 psig by limiting Reactor power in accordance with GP-9-2 "Fast Reactor Power Reduction" is a follow-up action out of OT-100 for low RPV water level. At no time will RPV level go low during due to the 30% reactor recirculation runback. Plausible if the candidate does not understand how the feedwater input affects the feedwater control system.
	C	The loss of the Total Feedwater input will cause a 30% reactor recirculation system runback transient. OT-112 is required to be entered due to the recirc runback resulting in reduced reactor core flow. One of the early follow-up actions of OT-112 is to monitor for Thermal Hydraulic Instability. Plausible if the candidate does not understand that a total loss of Feedwater signals will cause a 30% runback and not a 45% runback.

EXAMINATION ANSWER KEY

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	D	Tripping a RFP could be a follow-up action from procedure OT-110 "Reactor High Level". Reactor level will initially rise during the Reactor Recirculation Pump runback, but the RFPs will respond to maintain RPV level back to normal. If the candidate does not understand that level control automatic swaps to single element, then it is reasonable to assume that with a lower feed flow signal the feed pumps would speed up and RPV level would be above 23 inches.
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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:	1120226																																														
User-Defined ID:																																															
Cross Reference Number:	259002 A2.02																																														
Topic:	ILT 5006-6a-006-SRO																																														
Num Field 1:	2015 NRC																																														
Num Field 2:																																															
Text Field:																																															
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REQUIRED MATERIALS:	None																																														
Notes and Comments:	None																																														

EXAMINATION ANSWER KEY

2015 NRC Senior Reactor Operator Exam - Revision 0

16

ID: 1109486

Points: 1.00

Unit 2 Traversing In-Core Probe (TIP) System operation is in progress for an LPRM calibration.

A subsequent Feedwater transient results in the following conditions:

- The Reactor was manually scrammed
- RPV level lowered to -10 inches and is now at +20 inches
- The PRO reports the in-service TIP detector is driving into the core and the ball valve RED light is lit.

Based on the above conditions, determine the required initial action (if any).

- A. Direct the Reactor Engineer to continue the TIP trace IAW RE-35-2 "TIP System Operation."
- B. No operator actions are required per GP-8.B, "PCIS Isolations - Groups II and III."
- C. Direct the PRO to manually withdraw the TIP detector and close the ball valve IAW SO 7F.7-A-2 "TIP System Isolation in Event of Containment Isolation."
- D. Direct the PRO to manually fire the shear valve IAW SO 7F.7-A-2 "TIP System Isolation in Event of Containment Isolation."

Answer: C

Answer Explanation		
Choice		Basis or Justification
Correct:	C	For a TIP failure to isolate, GP-8.B directs manual isolation IAW SO 7F.7-2, which directs manually withdrawing the TIP detector to shield and closing the ball valve. This is recent plant OE. There was a concern about what the correct action was. SO 7F.7-2 now clearly lists the order to take the actions attempt to withdraw before firing the shear valve.
Distractors:	A	The TIP detector should automatically withdraw to shield and the ball valve should automatically close at 1-inch RPV level. Plausible if the candidate does not recall the isolation signal or the expected response to an isolation signal. Continuing to insert a TIP with a failed isolation signal is not correct.
	B	GP-8.B will direct the actions to take with a failed isolation. Plausible if the candidate does not understand the requirements following an isolation signal.
	D	The shear valve is only fired if the detector can not be retracted and then only if directed by the Shift Manager. Plausible if the candidate does not understand the requirements following an isolation signal.

EXAMINATION ANSWER KEY

2015 NRC Senior Reactor Operator Exam - Revision 0

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:	1109486																																														
User-Defined ID:																																															
Cross Reference Number:	215001A2.08																																														
Topic:	ILT-5007F-7d-002-SRO																																														
Num Field 1:	2015 NRC																																														
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Comments:	<table border="1"> <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> <tr> <td>HIGH</td> <td></td> <td></td> <td>10CRF55.43(b)(5)</td> </tr> <tr> <th colspan="4">Source Documentation</th> </tr> <tr> <td>Source:</td> <td colspan="2">New Exam item Modified Bank XILT Exam Bank</td> <td>Previous NRC Exam Other Exam Bank</td> </tr> <tr> <td>Reference(s):</td> <td colspan="3">GP-8.B, SO 7F.7.A-2</td> </tr> <tr> <td>Learning Objective:</td> <td colspan="3">PLOT-5007F-7d</td> </tr> <tr> <td>K/A System:</td> <td colspan="2">215001 Traversing In-Core Probe</td> <td>Importance: RO / SRO 2.7/ 2.9</td> </tr> <tr> <td>K/A Statement:</td> <td colspan="3">A2.08 - Ability to (a) predict the impacts of the following on the TRAVERSING IN-CORE PROBE and (b) based on those prediction, use produces to correct, control, or mitigate the consequences of those abnormal conditions or operations: Failure to retract to shield</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> </table>			Psychometrics				Level of Knowledge	Difficulty	Time Allowance (minutes)	RO	HIGH			10CRF55.43(b)(5)	Source Documentation				Source:	New Exam item Modified Bank XILT Exam Bank		Previous NRC Exam Other Exam Bank	Reference(s):	GP-8.B, SO 7F.7.A-2			Learning Objective:	PLOT-5007F-7d			K/A System:	215001 Traversing In-Core Probe		Importance: RO / SRO 2.7/ 2.9	K/A Statement:	A2.08 - Ability to (a) predict the impacts of the following on the TRAVERSING IN-CORE PROBE and (b) based on those prediction, use produces to correct, control, or mitigate the consequences of those abnormal conditions or operations: Failure to retract to shield			REQUIRED MATERIALS:	None			Notes and Comments:	None		
Psychometrics																																															
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Reference(s):	GP-8.B, SO 7F.7.A-2																																														
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REQUIRED MATERIALS:	None																																														
Notes and Comments:	None																																														

EXAMINATION ANSWER KEY

2015 NRC Senior Reactor Operator Exam - Revision 0

17

ID: 1110029

Points: 1.00

The following plant conditions exist on Unit 3:

- Reactor power is stable at 93% following a transient.
- A failure of the 'A' Reactor Recirculation Pump (RRP) controller resulted in the Unit RO manually locking up the scoop tube.
- 'A' Recirc pump speed is 65%.
- 'B' Recirc pump speed is 82%.
- 'A' jet pump loop flow is 37.80 Mlbm/hr.
- 'B' jet pump loop flow is 49.50 Mlbm/hr.

Based on the above conditions, determine which, if any, action is required by Technical Specifications and the associated bases.

- A. No action is required at this time.
Core cooling is assured if a LOCA were to occur at these pump speeds.
- B. Immediately trip the 'A' RRP, enter "Single Loop" operations and apply thermal limit penalties within 12 hours.
Core cooling may not be met if a LOCA were to occur during the time when pump speeds are mismatched.
- C. Within 12 hours raise 'A' RRP speed to match loop flows within ≤ 10.25 Mlbm/hr.
This reduces the vibration on the jet pumps with the low flow condition.
- D. Within 24 hours lower 'B' RRP speed to match loop flows within ≤ 5.125 Mlbm/hr.
Core cooling may not be met if a LOCA were to occur during the time when pump speeds are mismatched.

Answer: D

Answer Explanation		
Choice		Basis or Justification
Correct:	D	Technical Specification (TS) 3.4.1 requires loop flows to match within ≤ 5.125 Mlbm/hr. within 24 hours since total core flow will be greater than 71.75 Mlbm/hr after lowering the B RRP flow to match the A RRP. Per TS bases core cooling may not be met if a LOCA were to occur during the time when pump speeds are mismatched.
Distractors:	A	Incorrect. Action is required by TS 3.4.1 since the RRP loop flows are not matched. Per TS bases core cooling may not be met if a LOCA were to occur during the time when pump speeds are mismatched.
	B	Incorrect. There is no procedural or TS guidance to trip the lower speed pump and intentionally enter single loop operation. Plausible if the Candidate misinterprets TS 3.4.1 guidance if the unit was already in single loop operation.

EXAMINATION ANSWER KEY

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C	Incorrect. There is no guidance to raise the "A" RRP speed to match loop flows since this is the pump that is locked up and caused the loop flow mismatch in the first place. Also, getting the loop flows within ≤ 10.25 Mlbm/hr is the TS requirement if total core flow was < 71.75 Mlbm/hr. Not the case here. The 12 hour time frame is related to the TS 3.4.1 required limit modifications for single recirculation loop operation. It may be delayed for up to 12 hours after transition from two recirculation loop operation to single recirculation loop operation. Not the case here. Both loop of RRP stay in operation.
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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:	1110029																														
User-Defined ID:	A-ILT-5002-8-003																														
Cross Reference Number:	202002 G2.2.40																														
Topic:	ILT-5002-14-007-SRO																														
Num Field 1:	2015 NRC																														
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>10CRF55.43(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> New Exam item XModified Bank ILT Exam Bank </div> <div> Previous NRC Exam Other Exam Bank </div> </td> </tr> <tr> <td>Reference(s):</td> <td>OT-112, Tech Spec 3.4.1 and Bases</td> </tr> <tr> <td>Learning Objective:</td> <td>PLOT-5002-14</td> </tr> <tr> <td>K/A System:</td> <td> <div>202002 Recirculation Flow Control System</div> <div>Importance: RO / SRO 3.4/ 4.7</div> </td> </tr> <tr> <td>K/A Statement:</td> <td>2.2.40 Ability to apply Technical Specification for a system.</td> </tr> <tr> <td>REQUIRED MATERIALS:</td> <td>Tech.Spec. Section 3.4</td> </tr> <tr> <td>Notes and Comments:</td> <td>None</td> </tr> </tbody> </table>			Psychometrics				Level of Knowledge	Difficulty	Time Allowance (minutes)	RO	HIGH			10CRF55.43(b)(2)	Source Documentation		Source:	<div> New Exam item XModified Bank ILT Exam Bank </div> <div> Previous NRC Exam Other Exam Bank </div>	Reference(s):	OT-112, Tech Spec 3.4.1 and Bases	Learning Objective:	PLOT-5002-14	K/A System:	<div>202002 Recirculation Flow Control System</div> <div>Importance: RO / SRO 3.4/ 4.7</div>	K/A Statement:	2.2.40 Ability to apply Technical Specification for a system.	REQUIRED MATERIALS:	Tech.Spec. Section 3.4	Notes and Comments:	None
Psychometrics																															
Level of Knowledge	Difficulty	Time Allowance (minutes)	RO																												
HIGH			10CRF55.43(b)(2)																												
Source Documentation																															
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Reference(s):	OT-112, Tech Spec 3.4.1 and Bases																														
Learning Objective:	PLOT-5002-14																														
K/A System:	<div>202002 Recirculation Flow Control System</div> <div>Importance: RO / SRO 3.4/ 4.7</div>																														
K/A Statement:	2.2.40 Ability to apply Technical Specification for a system.																														
REQUIRED MATERIALS:	Tech.Spec. Section 3.4																														
Notes and Comments:	None																														

EXAMINATION ANSWER KEY

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18

ID: 1110187

Points: 1.00

- A fuel bundle is being moved in the Unit 2 fuel pool.
- It is currently on the fuel hoist and moving to a new location in the pool.
- During the move Fuel Pool level lowers to 232 feet and is continuing to lower.

Complete the statements below with respect to a fuel handling accident, and the required action for the lowering Fuel Pool level.

The USFAR ____ (1) ____ release limit may not be maintained for a Fuel Handling Accident.

Based on the above conditions, Technical Specifications requires ____ (2) ____.

- A. (1) iodine
(2) immediately stop moving the fuel bundle, leave the fuel bundle on the hoist until Fuel Pool level is recovered.
- B. (1) iodine
(2) completing the fuel move and suspending all subsequent moves until Fuel Pool level is recovered.
- C. (1) noble gas
(2) immediately stop moving the fuel bundle, leave the fuel bundle on the hoist until Fuel Pool level is recovered.
- D. (1) noble gas
(2) completing the fuel move and suspending all subsequent moves until Fuel Pool level is recovered.

Answer: B

Answer Explanation		
Choice		Basis or Justification
Correct:	B	When Fuel Pool level drops below 232 feet 3 inches Technical Specifications requires "Suspend movement of fuel assemblies in the spent fuel storage pool immediately. The bases goes on to explain that in this case the bundle movement shall continue to a safe position/location.
Distractors:	A	Plausible if the candidate does understand that leaving the bundle suspended is not in a safe location and that the bases requires that the move be completed to put the bundle in a safe location.
	C	Plausible if the candidate is not familiar with the bases for the water in the fuel pool providing a Iodine decontamination factor. Noble gases are not water soluble. Plausible if the candidate does understand that leaving the bundle suspended is not in a safe location and that the bases requires that the move be completed to put the bundle in a safe location.
	D	Plausible if the candidate is not familiar with the bases for the water in the fuel pool providing a Iodine decontamination factor. Noble gases are not water soluble.

EXAMINATION ANSWER KEY

2015 NRC Senior Reactor Operator Exam - Revision 0

Question 18 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:	1110187																																														
User-Defined ID:																																															
Cross Reference Number:	233000 2.2.22																																														
Topic:	ILT-5019-14-001-SRO																																														
Num Field 1:	2015 NRC																																														
Num Field 2:																																															
Text Field:																																															
Comments:	<table border="1"> <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> <tr> <td>HIGH</td> <td></td> <td></td> <td>10CRF55.43(b)(2)</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"/> Previous NRC Exam <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="3">Tech Spec 3.7.7 and Bases</td> </tr> <tr> <td>Learning Objective:</td> <td colspan="3">PLOT-5019-14</td> </tr> <tr> <td>K/A System:</td> <td>233000 Fuel Pool Cooling and Cleanup</td> <td colspan="2">Importance: RO / SRO 4.0/ 4.7</td> </tr> <tr> <td>K/A Statement:</td> <td colspan="3">2.2.22 Knowledge of limiting conditions for operations and safety limits.</td> </tr> <tr> <td>REQUIRED MATERIALS:</td> <td colspan="3">Technical Specification section 3.7</td> </tr> <tr> <td>Notes and Comments:</td> <td colspan="3">None</td> </tr> </table>			Psychometrics				Level of Knowledge	Difficulty	Time Allowance (minutes)	RO	HIGH			10CRF55.43(b)(2)	Source Documentation				Source:	<input checked="" type="checkbox"/> New Exam item <input type="checkbox"/> Previous NRC Exam <input type="checkbox"/> Modified Bank <input type="checkbox"/> Other Exam Bank <input type="checkbox"/> ILT Exam Bank			Reference(s):	Tech Spec 3.7.7 and Bases			Learning Objective:	PLOT-5019-14			K/A System:	233000 Fuel Pool Cooling and Cleanup	Importance: RO / SRO 4.0/ 4.7		K/A Statement:	2.2.22 Knowledge of limiting conditions for operations and safety limits.			REQUIRED MATERIALS:	Technical Specification section 3.7			Notes and Comments:	None		
Psychometrics																																															
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Reference(s):	Tech Spec 3.7.7 and Bases																																														
Learning Objective:	PLOT-5019-14																																														
K/A System:	233000 Fuel Pool Cooling and Cleanup	Importance: RO / SRO 4.0/ 4.7																																													
K/A Statement:	2.2.22 Knowledge of limiting conditions for operations and safety limits.																																														
REQUIRED MATERIALS:	Technical Specification section 3.7																																														
Notes and Comments:	None																																														

EXAMINATION ANSWER KEY

2015 NRC Senior Reactor Operator Exam - Revision 0

19

ID: 1120466

Points: 1.00

A Refuel Outage is in progress on Unit 2. The following conditions exist:

- The 50th fuel bundle from the Core Component Transfer Authorization Sheet (CCTAS) is being lowered into the core.
- All WRNM detectors have at least five (5) fuel bundles adjacent to the detectors.
- WRNM count rate doubles two times as the bundle is lowered into the core.

With respect to the above conditions what action is required per FH-6C, "Core Component Movement - Core Transfers"?

- A. Complete lowering the bundle into the core then continue with the next schedule bundle move.
- B. Complete lowering the fuel bundle into the core, then suspend fuel movements.
- C. Raise the bundle from the core so that it clears the upper grid.
- D. Return the bundle to the fuel pool.

Answer: C

Answer Explanation		
Choice		Basis or Justification
Correct:	C	Procedure FH-6C and ON-124 directs that if count rate doubles two times that the bundle shall be raised above the upper grid.
Distractors:	A	Plausible if the candidate is not familiar with the requirements of FH-6C. If count rate had only doubled one time then placing the bundle would be the correct answer.
	B	Plausible if the candidate is not familiar with the requirements of FH-6C. If count rate had only doubled one time then placing the bundle would be the correct answer.
	D	Plausible if the candidate is not familiar with the requirements of FH-6C.

EXAMINATION ANSWER KEY

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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:	1120466		
User-Defined ID:	NLSRO-0763-3-002		
Cross Reference Number:	234000 K3.03/2.1.41		
Topic:	ILT-0763-3-003-SRO		
Num Field 1:	2015 NRC		
Num Field 2:	N/A		
Text Field:			
Comments:	Psychometrics		
	Level of Knowledge	Difficulty	Time Allowance (minutes)
	MEMORY		RO
			10CRF55.43(b)(7)
	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):	FH-6	
	Learning Objective:	NLSRO-0760-3	
	K/A System:	2.1 Conduct of Operations	Importance: RO / SRO 2.8/ 3.7
	K/A Statement:	2.1.41 - Knowledge of the refueling process.	
	REQUIRED MATERIALS:	None	
	Notes and Comments:	None	

EXAMINATION ANSWER KEY

2015 NRC Senior Reactor Operator Exam - Revision 0

20

ID: 1109527

Points: 1.00

A break occurs in the instrument air supply line to AO-9120A.

Using P&ID M-304 sheet 2, determine the impact on feedwater heating and what action is required.

Feedwater heating ___(1)___ lost, and the Crew shall ___(2)___.

- A. (1) is
(2) return Reactor power to the pre-transient level.
- B. (1) is
(2) reduce Reactor power 10% below the pre-transient level.
- C. (1) is not
(2) place the Backup Air compressor in-service.
- D. (1) is not
(2) cross tie the Unit 2 and Unit 3 air headers.

Answer: A

Answer Explanation		
Choice		Basis or Justification
Correct:	A	The loss of air causes the AO-9120A to fail closed as determined on print M-304 Sheet 2. The closed valve will isolate extraction steam to the A4 feedwater heater thereby lowering feedwater temperature and raising reactor power. OT-104 "Positive Reactivity Insertion" must be entered. OT-104 states : IF only one feedwater heater is out of service/isolated after the transient AND all 5th stage feedwater heaters are in service, THEN INSERT control rods as necessary to maintain APRM indicated power within the analyzed region of the Power Flow Map AND less than or equal to the pre-transient power level.
Distractors:	B	Incorrect. OT-104 states to MAINTAIN power at least 10% below the initial level IF the cause of the positive reactivity insertion CANNOT be determined. Not the case here.
	C	The loss of air causes the AO-9120A to fail closed as determined on print M-304 Sheet 2. The closed valve will isolate extraction steam to the A4 feedwater heater thereby lowering feedwater temperature and raising reactor power. ON-119 "Loss of Instrument Air" would only be entered if the unit instrument air pressure/supply were threatened (low system pressure). A single instrument air line break is not beyond the capacity of the system and is not enough to effect the overall instrument air system pressure and therefore entry into ON-119 is not required here.

EXAMINATION ANSWER KEY

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D	The loss of air causes the AO-9120A to fail closed as determined on print M-304 Sheet 2. The closed valve will isolate extraction steam to the A4 feedwater heater thereby lowering feedwater temperature and raising reactor power. ON-119 "Loss of Instrument Air" would only be entered if the unit instrument air pressure/supply were threatened (low system pressure). A single instrument air line break is not beyond the capacity of the system and is not enough to effect the overall instrument air system pressure and therefore entry into ON-119 is not required here.
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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:	1.00																																														
System ID:	1109527																																														
User-Defined ID:																																															
Cross Reference Number:	2.2.15																																														
Topic:	ILT1540-7-001-SRO-OT-104																																														
Num Field 1:	2015 NRC																																														
Num Field 2:																																															
Text Field:																																															
Comments:	<table><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><tr><td>HIGH</td><td></td><td></td><td>10CRF55.43(b)(5)</td></tr><tr><th colspan="4">Source Documentation</th></tr><tr><td>Source:</td><td colspan="2">XNew Exam item Modified Bank ILT Exam Bank</td><td>Previous NRC Exam Other Exam Bank</td></tr><tr><td>Reference(s):</td><td colspan="3">OT-104</td></tr><tr><td>Learning Objective:</td><td colspan="3">PLOT-1540-7</td></tr><tr><td>K/A System:</td><td colspan="2">2.2 Equipment Control</td><td>Importance: RO / SRO 3.9/ 4.3</td></tr><tr><td>K/A Statement:</td><td colspan="3">2.2.15 - Ability to determine the expected plant configuration using design and configuration control documentation, such as drawings, line-ups, tag-outs, etc.</td></tr><tr><td>REQUIRED MATERIALS:</td><td colspan="3">M-304 Sheet 2</td></tr><tr><td>Notes and Comments:</td><td colspan="3">None</td></tr></table>			Psychometrics				Level of Knowledge	Difficulty	Time Allowance (minutes)	RO	HIGH			10CRF55.43(b)(5)	Source Documentation				Source:	XNew Exam item Modified Bank ILT Exam Bank		Previous NRC Exam Other Exam Bank	Reference(s):	OT-104			Learning Objective:	PLOT-1540-7			K/A System:	2.2 Equipment Control		Importance: RO / SRO 3.9/ 4.3	K/A Statement:	2.2.15 - Ability to determine the expected plant configuration using design and configuration control documentation, such as drawings, line-ups, tag-outs, etc.			REQUIRED MATERIALS:	M-304 Sheet 2			Notes and Comments:	None		
Psychometrics																																															
Level of Knowledge	Difficulty	Time Allowance (minutes)	RO																																												
HIGH			10CRF55.43(b)(5)																																												
Source Documentation																																															
Source:	XNew Exam item Modified Bank ILT Exam Bank		Previous NRC Exam Other Exam Bank																																												
Reference(s):	OT-104																																														
Learning Objective:	PLOT-1540-7																																														
K/A System:	2.2 Equipment Control		Importance: RO / SRO 3.9/ 4.3																																												
K/A Statement:	2.2.15 - Ability to determine the expected plant configuration using design and configuration control documentation, such as drawings, line-ups, tag-outs, etc.																																														
REQUIRED MATERIALS:	M-304 Sheet 2																																														
Notes and Comments:	None																																														

EXAMINATION ANSWER KEY

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21

ID: 994801

Points: 1.00

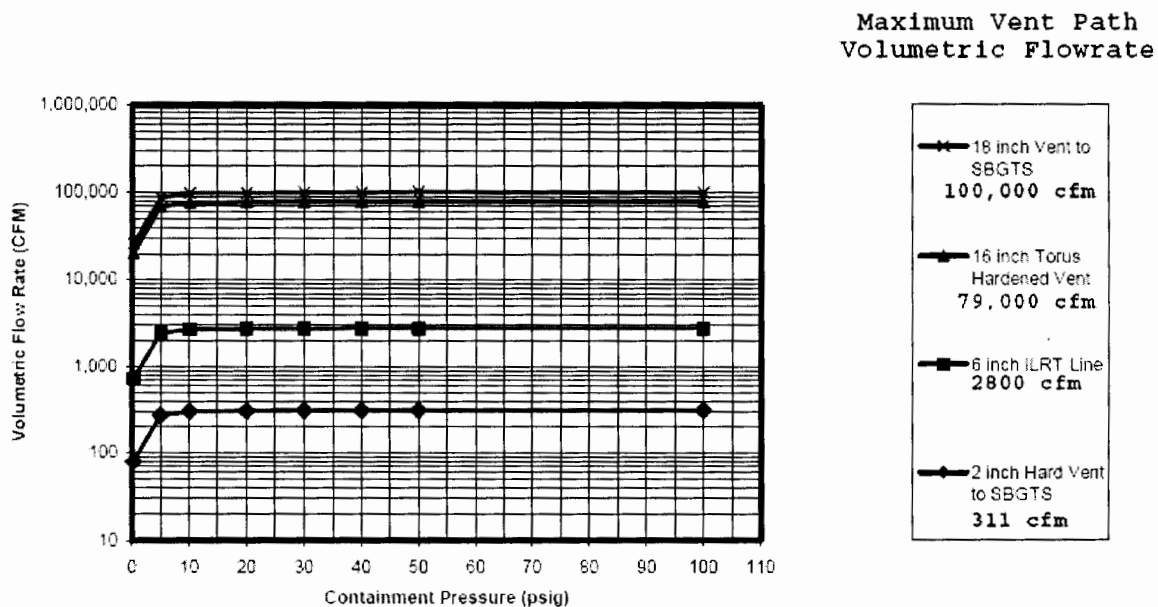
A transient on Unit 2 resulted in the following conditions:

- Containment venting is required for combustible gas control using T-200-2 "Primary Containment Venting"
- Chemistry determined that the maximum Containment vent rate that will not exceed the General Emergency release rate is 2,000 scfm
- Drywell pressure on PR-2508 is 25 psig
- Standby Gas Treatment is available

Using Figure 1 of T-200-2, PROVIDED BELOW, determine which one of the following vent paths will most quickly remove the combustible gases without exceeding the General Emergency release rate.

FIGURE 1

MAXIMUM PRIMARY CONTAINMENT VENT RATE FOR VARIOUS VENT PATH SIZES



- A. 2 inch hard vent to SBGTS
- B. 6 inch ILRT line
- C. 16 inch Torus Hardened Vent
- D. 18 inch vent to SBGTS

Answer: A

EXAMINATION ANSWER KEY

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Answer Explanation		
Correct:	A	Plot Containment pressure of 25 psig and vent rate of 2000 SFCM, the point is ABOVE the 2 in Hard Vent to SBGTS Line and BELOW the 6 inch ILRT Line; the 2 in Hard Vent to SBGTS is the largest vent path that will NOT exceed the GE release rate.
Distractors:	B	Plot Containment pressure of 25 psig and vent rate of 2000 SFCM, the point is ABOVE the 2 in Hard Vent to SBGTS Line and BELOW the 6 inch ILRT Line; the 2 in Hard Vent to SBGTS is the largest vent path that will NOT exceed the GE release rate. Plausible if plotted wrong or the candidate does not understand the curve.
	C	Plot Containment pressure of 25 psig and vent rate of 2000 SFCM, the point is ABOVE the 2 in Hard Vent to SBGTS Line and BELOW the 6 inch ILRT Line; the 2 in Hard Vent to SBGTS is the largest vent path that will NOT exceed the GE release rate. Plausible if plotted wrong or the candidate does not understand the curve.
	D	Plot Containment pressure of 25 psig and vent rate of 2000 SFCM, the point is ABOVE the 2 in Hard Vent to SBGTS Line and BELOW the 6 inch ILRT Line; the 2 in Hard Vent to SBGTS is the largest vent path that will NOT exceed the GE release rate. Plausible if plotted wrong or the candidate does not understand the curve.

Question 21 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:	994801		
User-Defined ID:	ILT-2102-7B-004		
Cross Reference Number:	G.2.3 G.2.3.11		
Topic:	ILT-2102-7B-004 A transient on Unit 2 resulted in the following conditions: *Containment venting is		
Num Field 1:			
Num Field 2:			
Text Field:	NRC-09-1		
Comments:	Psychometrics		
	Level of Knowledge	Difficulty	Time Allowance (minutes)
	HIGH		10CRF55.43(b)(4)
	Source Documentation		
	Source:	New Exam item Modified Bank XILT Exam Bank	Previous NRC Exam Other Exam Bank
	Reference(s):	T-102 and bases, T-200-2	

EXAMINATION ANSWER KEY

2015 NRC Senior Reactor Operator Exam - Revision 0

	Learning Objective:	PLOT-2102-7b	
	K/A System:	2.3 Radiation Control	Importance: RO / SRO 3.8/ 4.3
	K/A Statement:	2.3.11 - Ability to control radiation releases	
	REQUIRED MATERIALS:	None	
	Notes and Comments:	None	

EXAMINATION ANSWER KEY

2015 NRC Senior Reactor Operator Exam - Revision 0

22

ID: 1109652

Points: 1.00

A high power ATWS has occurred on Unit 2. The following conditions exist:

- MSIVs are closed
- RPV pressure is rapidly fluctuating between 1130 and 1135 psig
- Reactor power is fluctuating between 55 and 65%
- The "C" SRV is CYCLING
- Instrument nitrogen has not been restored

Based on the above conditions, which of the below statements is the highest priority action?

- A. Stabilize RPV pressure at 1050 psig to minimize Torus heatup using procedure RRC 1G.2-2 "Relief Valve Manual Operation During a Plant Event".
- B. Reduce RPV pressure below 950 psig to prevent SRV tailpipe failure using procedure RRC 1G.2-2 "Relief Valve Manual Operation During a Plant Event".
- C. Restore Instrument Nitrogen using RRC 16.1-2 "Bypass and Restore Instrument Nitrogen Supply to the Drywell", then stabilize RPV pressure at 1050 psig to minimize Torus heatup.
- D. Restore Instrument Nitrogen using RRC 16.1-2 "Bypass and Restore Instrument Nitrogen Supply to the Drywell", then reduce RPV pressure below 950 psig to prevent SRV tailpipe failure.

Answer: B

Answer Explanation		
Choice		Basis or Justification
Correct:	B	The information given in the stem of the question indicates that the "C" SRV is cycling. T-101 bases states; "Cycling SRVs pose several potential challenges to plant operation for the following reasons. One is the significant dynamic load imposed on the RPV, SRV tailpipes and supporting structures, and the Primary Containment". T-101 directs that if there is a cycling SRV to reduce RPV pressure to 950 psig regardless of the Status on Instrument Nitrogen.
Distractors:	A	Minimizing Torus heatup in not a bases step for stabilizing RPV pressure. If a SRV is not cycling then Instrument Nitrogen is restored before pressure control is established. Plausible if the candidate does not diagnosis the cycling SRV and implements the standard pressure control step to stabilize pressure below 1050 psig.
	C	Minimizing Torus heatup in not a bases step for stabilizing RPV pressure. Plausible if the candidate does not diagnosis the cycling SRV and implements the standard pressure control step os stabilize pressure below 1050 psig.
	D	Plausible if the candidate does not recall that establishing pressure control when an SRV is cycling has priority over restoring Instrument Nitrogen.

EXAMINATION ANSWER KEY

2015 NRC Senior Reactor Operator Exam - Revision 0

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:	1.00																																														
System ID:	1109652																																														
User-Defined ID:																																															
Cross Reference Number:	2.4.18																																														
Topic:	ILT-2101-6-004-SRO																																														
Num Field 1:	2015 NRC																																														
Num Field 2:																																															
Text Field:																																															
Comments:	<table border="1"> <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> <tr> <td>HIGH</td> <td></td> <td></td> <td>10CRF55.43(b)(5)</td> </tr> <tr> <th colspan="4">Source Documentation</th> </tr> <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> <td> <input type="checkbox"/> Previous NRC Exam <input type="checkbox"/> Other Exam Bank </td> </tr> <tr> <td>Reference(s):</td> <td colspan="3">T-101 BASES</td> </tr> <tr> <td>Learning Objective:</td> <td colspan="3">PLOT-2101-6</td> </tr> <tr> <td>K/A System:</td> <td colspan="2">2.4 Emergency Procedures / Plan</td> <td>Importance: RO / SRO 3.3/ 4.0</td> </tr> <tr> <td>K/A Statement:</td> <td colspan="3">2.4.18 Knowledge of the specific bases for EOPs</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> </table>			Psychometrics				Level of Knowledge	Difficulty	Time Allowance (minutes)	RO	HIGH			10CRF55.43(b)(5)	Source Documentation				Source:	<input checked="" type="checkbox"/> New Exam item <input type="checkbox"/> Modified Bank <input type="checkbox"/> ILT Exam Bank		<input type="checkbox"/> Previous NRC Exam <input type="checkbox"/> Other Exam Bank	Reference(s):	T-101 BASES			Learning Objective:	PLOT-2101-6			K/A System:	2.4 Emergency Procedures / Plan		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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REQUIRED MATERIALS:	None																																														
Notes and Comments:	None																																														

EXAMINATION ANSWER KEY

2015 NRC Senior Reactor Operator Exam - Revision 0

23

ID: 994327

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) Clearance
(2) the Plant Manager
- B. (1) Clearance
(2) Operations Shift Management
- C. (1) Equipment Status Tag
(2) Operations Shift Management
- D. (1) Equipment Status Tag
(2) the Plant Manager

Answer: B

Answer Explanation		
Choice		Basis or Justification
Correct:	B	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, also requires Drywell entry approval from both a Radiation Protection Supervisor and from Operations Shift Management.
Distractors:	A	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.
	C	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.

EXAMINATION ANSWER KEY

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D	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.
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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:	1.00		
System ID:	994327		
User-Defined ID:	ILT-1730-2C-001		
Cross Reference Number:	G2.3.13		
Topic:	ILT-1730-2c-001 Drywell Initial Entry		
Num Field 1:	0.00		
Num Field 2:	0.00		
Text Field:	ILT05-1 NRC Exam SRO#23		
Comments:	Psychometrics		
	Level of Knowledge	Difficulty	Time Allowance (minutes)
	RO		
	MEMORY		10CRF55.43(b)(4)
	Source Documentation		
	Source:	XNew Exam item Modified Bank ILT Exam Bank	
	Reference(s):	GP-3-2; RP-PB-461	
	Learning Objective:	PLOT-1730-2c	
	K/A System:	2.3 Radiation Control	Importance: RO / SRO 3.4/ 3.8
	K/A Statement:	2.3.13 - Knowledge of radiological safety procedures pertaining to licensed operator duties, such as response to radiation monitor alarms, containment entry requirements, fuel handling responsibilities, access to locked high-radiation areas, aligning filters, etc.	
	REQUIRED MATERIALS:	None	
	Notes and Comments:	None	

EXAMINATION ANSWER KEY

2015 NRC Senior Reactor Operator Exam - Revision 0

24

ID: 994196

Points: 1.00

A plant start-up and heat-up is in progress on Unit 3 with both recirc pumps in service. Reactor power is 5%. The following data has been collected:

	RPV DRAIN TEMP	"A" RECIRC LOOP TEMP	"B" RECIRC LOOP TEMP
0915	221 degrees	250 degrees	252 degrees
0930	250 degrees	275 degrees	278 degrees
0945	275 degrees	305 degrees	308 degrees
1000	310 degrees	335 degrees	337 degrees
1015	319 degrees	349 degrees	364 degrees

Based on the above data, which one of the following describes the required actions?

- A. Additional control rods may be withdrawn in accordance with the NF-AB-720 approved sequence. Rods must be moved by single notch withdrawal.
- B. Insert control rods in the reverse order of the NF-AB-720 approved sequence and take Technical Specification actions.
- C. Additional control rods may be withdrawn in accordance with the NF-AB-720 approved sequence. Rods can be withdrawn using continuous withdraw.
- D. Insert control rods in accordance with GP-9-3, "Fast Reactor Power Reduction".

Answer: B

Answer Explanation		
Choice		Basis or Justification
Correct:	B	Heatup rate is in excess of the 100°F/hour TS limit (B Recirc loop delta temperature from 09:15 to 10:15 = 112 F) GP-2 requires the operator to insert control rods in reverse order of the NF-AB-720 approved sequence.
Distractors:	A	It is NOT within the TS limit, and is outside of the administrative heat up rate defined in GP-2. (90°F). Plausible if the candidate does not calculate the values correctly or does not understand the requirements of exceeding the heatup rate.
	C	Heatup rate is not within admin limit. Plausible if the candidate does not calculate the values correctly or does not understand the requirements of exceeding the heatup rate.
	D	While heatup rate is outside the 90°F/hr limit, rods would not be driven in via GP-9-3. Plausible if the candidate does not calculate the values correctly or does not understand the requirements of exceeding the heatup rate.

EXAMINATION ANSWER KEY

2015 NRC Senior Reactor Operator Exam - Revision 0

Question 24 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:	994196																														
User-Defined ID:	A-ILT-1530-4-001																														
Cross Reference Number:	290002 G 2.1.7/2.1.25																														
Topic:	ILT-1530-4-002-SRO A plant start-up and heat-up is in progress on Unit 3 with both recirc pumps in																														
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REQUIRED MATERIALS:	None																														
Notes and Comments:	None																														

EXAMINATION ANSWER KEY

2015 NRC Senior Reactor Operator Exam - Revision 0

25

ID: 1109654

Points: 1.00

The following conditions exist on Unit 2 following a loss of all condensate pumps:

- HPCI is blocked for maintenance
- RCIC is controlling RPV level between -70 and -100 inches
- RCIC turbine malfunction results in exhaust pressure rising to 12 psid
- Exhaust rupture discs PSD-3 and PSD-4 rupture as designed
- All Low Pressure ECCS pumps are available

ARC 222 E-2, "RCIC TURB EXH DIAPHRAGM HI PRESS, (OPERATOR ACTIONS) contains the following statement:

IF not required for adequate core cooling, THEN trip RCIC turbine.

For the above conditions, the Crew can verify the rupture disc failure by verifying a rise in ____ (1) ____.
RCIC shall ____ (2) ____.

- A. (1) Torus compartment temperature on point 8 of TR-2-13-139, "Area Temp"
(2) remain in service in accordance with T-101, "RPV Control" to maintain ACC
- B. (1) Torus compartment temperature on point 8 of TR-2-13-139, "Area Temp"
(2) be secured using RRC 13.1-2, "RCIC System Operation During a Plant Event"
- C. (1) Reactor Building Floor Drain Sump level as indicated by ARC-215 E-2, "RB Floor Drain Sump Hi-Hi-level".
(2) be secured using RRC 13.1-2, "RCIC System Operation During a Plant Event".
- D. (1) Reactor Building Floor Drain Sump level as indicated by ARC-215 E-2, "RB Floor Drain Sump Hi-Hi-level".
(2) remain in service in accordance with T-101, "RPV Control" to maintain ACC

Answer: B

Answer Explanation		
Choice		Basis or Justification
Correct:	B	RCIC Exhaust Rupture diaphragm vents to the Torus compartment. There are several options that need to be evaluated by the SRO before securing RCIC. There are other high pressure systems (CRD & SLC) that should be placed in-service to maintain RPV level. Low pressure ECCS is available if level does drop to -172 inches. RCIC operation is affecting plant parameters. Based on this information the SRO should determine that RCIC should be removed from service.
Distractors:	A	Plausible if the candidate fails to recognize that RCIC is not required to maintain ACC.

EXAMINATION ANSWER KEY

2015 NRC Senior Reactor Operator Exam - Revision 0

	C	Plausible if the candidate does not recall that the Rupture diaphragm discharges into the Torus Compartment and not the Reactor Building Sump Room.
	D	Plausible if the candidate does not recall that the Rupture diaphragm discharges into the Torus Compartment and not the Reactor Building Sump Room. Plausible if the candidate fails to recognize that RCIC is not required to maintain ACC.

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:	1.00																																														
System ID:	1109654																																														
User-Defined ID:																																															
Cross Reference Number:	2.4.50																																														
Topic:	ILT5013-10m-001-SRO																																														
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