With a LOCA initiation signal present, an automatic trip of the HPCS Emergency Diesel Generator will occur if there is a(n):

A. low lube oil pressure.

B. high crankcase pressure.

C. generator overcurrent.

D. incomplete sequence (fail to start) signal.

ANSWER:	D ✓
QUESTION TYPE:	RO
KA# & KA VALUE:	264000/K4.02 & 4.0; Emergency Generator trips (Emergency/LOCA)
REFERENCE:	SD000200, Revision 9, page 28
SOURCE:	New Question – RO Tier 2, Group 1
LEARNING OBJECTIVE:	5323 – List the ten trip signals for DG 3. Indicate which trips are bypassed on high drywell pressure or low RPV level.
RATING:	1
ATTACHMENTS:	None
JUSTIFICATION:	All the engine and generator conditions listed will trip the EDG under normal operating conditions. With a LOCA signal present, all the conditions listed are bypassed with the exception of Incomplete sequence. Therefore, answer D is the only correct choice.
10CFR55 BASIS:	10CFR55.41 (7)
COMMENTS:	Q 1

The plant is coming out of an outage with the reactor at 19 percent power. A maintenance supervisor reports to the control room that a review of an outage modification package revealed all the LPCS Pump Start – LOCA Time Delay relays were calibrated to actuate in 8.41 seconds.

How long do the attached technical specifications allow for returning at least one of these relays to an operable status before other action is required?

A. 12 hours

B. 24 hours

C. 36 hours

D. 7 days

ANSWER:	B
QUESTION TYPE:	SRO
KA# & KA VALUE:	209001/2.1.12 & 4.0, LPCS/Ability to apply technical specifications for a system.
REFERENCE:	Technical Specifications, sections 3.3.5.1 and 3.5.1
SOURCE:	New Question – RO/SRO Tier 2, Group 1
LEARNING OBJECTIVE:	5487 – With the technical specifications provided, locate all Safety Limits and/or LCO's associated with the LPCS system.
RATING:	3
ATTACHMENTS:	Technical specifications sections 3.3.5.1 and 3.5.1.
JUSTIFICATION:	With all the referenced relays out specification (as defined by table 3.3.5.1), Action Statement C is entered. This Action Statement allows 24 hours to return at least one channel to an operable status before declaring the LPCS system inoperable. Therefore, answer B is correct.
10CFR55 BASIS:	10CFR55.41 (2)
COMMENTS:	Q 2

3.5 EMERGENCY CORE COOLING SYSTEMS (ECCS) AND REACTOR CORE ISOLATION COOLING (RCIC) SYSTEM

3.5.1 ECCS – Operating

LCO 3.5.1 Each ECCS injection/spray subsystem and the Automatic Depressurization System (ADS) function of six safety/relief valves shall be OPERABLE.

APPLICABILITY: MODE 1,
MODES 2 and 3, except ADS valves are not required to be OPERABLE with reactor steam dome pressure ≤ 150 psig.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One low pressure ECCS injection/spray subsystem inoperable.	A.1	Restore low pressure ECCS injection/spray subsystem to OPERABLE status.	7 days
B. High Pressure Core Spray (HPCS) System inoperable.	B.1	Verify by administrative means RCIC System is OPERABLE when RCIC System is required to be OPERABLE.	Immediately
	<u>AND</u>		
	B.2	Restore HPCS System to OPERABLE status.	14 days

(continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
G. Required Action and associated Completion Time of Condition E or F not met. OR Two or more required ADS valves inoperable.	G.1 Be in MODE 3. AND G.2 Reduce reactor steam dome pressure to ≤ 150 psig.	12 hours 36 hours
H. HPCS and Low Pressure Core Spray (LPCS) Systems inoperable. OR Three or more ECCS injection/spray subsystems inoperable. OR HPCS System and one or more required ADS valves inoperable. OR Two or more ECCS injection/spray subsystems and one or more required ADS valves inoperable.	H.1 Enter LCO 3.0.3.	Immediately

3.3 INSTRUMENTATION

3.3.5.1 Emergency Core Cooling System (ECCS) Instrumentation

LCO 3.3.5.1 The ECCS instrumentation for each Function in Table 3.3.5.1-1 shall be OPERABLE.

APPLICABILITY: According to Table 3.3.5.1-1.

ACTIONS

-----------------------------------NOTE-----------------------------------
Separate Condition entry is allowed for each channel.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more channels inoperable.	A.1 Enter the Condition referenced in Table 3.3.5.1-1 for the channel.	Immediately
B. As required by Required Action A.1 and referenced in Table 3.3.5.1-1.	B.1 --------NOTES-------- 1. Only applicable in MODES 1, 2, and 3. 2. Only applicable for Functions 1.a, 1.b, 2.a, and 2.b. -------------------- Declare supported feature(s) inoperable when its redundant feature ECCS initiation capability is inoperable.	1 hour from discovery of loss of initiation capability for feature(s) in both divisions
	<u>AND</u>	(continued)

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
C. (continued)	C.2	Restore channel to OPERABLE status.	24 hours
D. As required by Required Action A.1 and referenced in Table 3.3.5.1-1.	D.1	--------NOTE-------- Only applicable if HPCS pump suction is not aligned to the suppression pool. -------------------- Declare HPCS System inoperable.	1 hour from discovery of loss of HPCS initiation capability
	<u>AND</u>		
	D.2.1	Place channel in trip.	24 hours
	<u>OR</u>		
	D.2.2	Align the HPCS pump suction to the suppression pool.	24 hours

(continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
F. (continued)	F.2 Place channel in trip.	96 hours from discovery of inoperable channel concurrent with HPCS or reactor core isolation cooling (RCIC) inoperable AND 8 days
G. As required by Required Action A.1 and referenced in Table 3.3.5.1-1.	G.1 --------NOTE--------- Only applicable for Functions 4.b, 4.d, 4.e, 5.b, and 5.d. --------------------- Declare ADS valves inoperable. AND	 1 hour from discovery of loss of ADS initiation capability in both trip systems (continued)

SURVEILLANCE REQUIREMENTS

------------------------------------NOTES------------------------------------

1. Refer to Table 3.3.5.1-1 to determine which SRs apply for each ECCS Function.

2. When a channel is placed in an inoperable status solely for performance of required Surveillances, entry into associated Conditions and Required Actions may be delayed as follows: (a) for up to 6 hours for Functions 3.c, 3.f, and 3.g; and (b) for up to 6 hours for Functions other than 3.c, 3.f, and 3.g provided the associated Function or the redundant Function maintains ECCS initiation capability.

SURVEILLANCE		FREQUENCY
SR 3.3.5.1.1	Perform CHANNEL CHECK.	12 hours
SR 3.3.5.1.2	Perform CHANNEL FUNCTIONAL TEST.	92 days
SR 3.3.5.1.3	Perform CHANNEL CALIBRATION.	92 days
SR 3.3.5.1.4	Perform CHANNEL CALIBRATION.	18 months
SR 3.3.5.1.5	Perform CHANNEL CALIBRATION.	24 months
SR 3.3.5.1.6	Perform LOGIC SYSTEM FUNCTIONAL TEST.	24 months

Table 3.3.5.1-1 (page 2 of 4)
Emergency Core Cooling System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER FUNCTION	CONDITIONS REFERENCED FROM REQUIRED ACTION A.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
2. LPCI B and LPCI C Subsystems					
a. Reactor Vessel Water Level − Low Low Low, Level 1	1,2,3, 4(a),5(a)	2(b)	B	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.4 SR 3.3.5.1.6	≥ -142.3 inches
b. Drywell Pressure − High	1,2,3	2(b)	B	SR 3.3.5.1.2 SR 3.3.5.1.4 SR 3.3.5.1.6	≤ 1.88 psig
c. LPCI Pump B Start − LOCA Time Delay Relay	1,2,3, 4(a),5(a)	1(e)	C	SR 3.3.5.1.5 SR 3.3.5.1.6	≥ 17.24 seconds and ≤ 21.53 seconds
d. LPCI Pump C Start − LOCA Time Delay Relay	1,2,3, 4(a),5(a)	1(e)	C	SR 3.3.5.1.5 SR 3.3.5.1.6	≥ 8.53 seconds and ≤ 10.64 seconds
e. LPCI Pump B Start − LOCA/LOOP Time Delay Relay	1,2,3, 4(a),5(a)	1	C	SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.6	≥ 3.04 seconds and ≤ 6.00 seconds
f. Reactor Vessel Pressure − Low (Injection Permissive)	1,2,3	1 per valve	C	SR 3.3.5.1.2 SR 3.3.5.1.4 SR 3.3.5.1.6	≥ 448 psig and ≤ 492 psig
	4(a),5(a)	1 per valve	B	SR 3.3.5.1.2 SR 3.3.5.1.4 SR 3.3.5.1.6	≥ 448 psig and ≤ 492 psig
g. LPCI Pumps B & C Discharge Flow − Low (Minimum Flow)	1,2,3, 4(a),5(a)	1 per pump	E	SR 3.3.5.1.2 SR 3.3.5.1.4 SR 3.3.5.1.6	≥ 605 gpm and ≤ 984 gpm
h. Manual Initiation	1,2,3, 4(a),5(a)	2	C	SR 3.3.5.1.6	NA
3. High Pressure Core Spray (HPCS) System					
a. Reactor Vessel Water Level − Low Low, Level 2	1,2,3, 4(a),5(a)	4(b)	B	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.4 SR 3.3.5.1.6	≥ -58 inches

(continued)

(a) When associated subsystem(s) are required to be OPERABLE.

(b) Also required to initiate the associated DG.

(e) Also supports OPERABILITY of 230 kV offsite power circuit pursuant to LCO 3.8.1 and LCO 3.8.2

Table 3.3.5.1-1 (page 4 of 4)
Emergency Core Cooling System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER FUNCTION	CONDITIONS REFERENCED FROM REQUIRED ACTION A.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
4. ADS Trip System A (continued)					
e. LPCI Pump A Discharge Pressure — High	1,2(d),3(d)	2	G	SR 3.3.5.1.2 SR 3.3.5.1.4 SR 3.3.5.1.6	≥ 116 psig and ≤ 134 psig
f. Accumulator Backup Compressed Gas System Pressure — Low	1,2(d),3(d)	3	F	SR 3.3.5.1.2 SR 3.3.5.1.4 SR 3.3.5.1.6	≥ 151.4 psig
g. Manual Initiation	1,2(d),3(d)	4	G	SR 3.3.5.1.6	NA
5. ADS Trip System B					
a. Reactor Vessel Water Level — Low Low Low, Level 1	1,2(d),3(d)	2	F	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.4 SR 3.3.5.1.6	≥ -142.3 inches
b. ADS Initiation Timer	1,2(d),3(d)	1	G	SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.6	≤ 115.0 seconds
c. Reactor Vessel Water Level — Low, Level 3 (Permissive)	1,2(d),3(d)	1	F	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.4 SR 3.3.5.1.6	≥ 9.5 inches
d. LPCI Pumps B & C Discharge Pressure — High	1,2(d),3(d)	2 per pump	G	SR 3.3.5.1.2 SR 3.3.5.1.4 SR 3.3.5.1.6	≥ 116 psig and ≤ 134 psig
e. Accumulator Backup Compressed Gas System Pressure — Low	1,2(d),3(d)	3	F	SR 3.3.5.1.2 SR 3.3.5.1.4 SR 3.3.5.1.6	≥ 151.4 psig
f. Manual Initiation	1,2(d),3(d)	4	G	SR 3.3.5.1.6	NA

(d) With reactor steam dome pressure > 150 psig.

All the instrument channels associated with the SRMs, IRMs, and APRMs are operable and their associated NORMAL/BYPASS switches are in the NORMAL position.

The minimum number of IRMs that must be on Range 8, or higher, for the SRM UPSCALE HI rod block to be bypassed is:

A. at least 2 IRM channels in each RPS trip system.

B. at least 3 IRM channels in each RPS trip system.

C. any 6 IRM channels.

D. all 8 IRM channels.

ANSWER:	D ✓
QUESTION TYPE:	RO
KA# & KA VALUE:	215004/K4.01 & 3.7 – Source Range Monitor/Rod Withdraw Blocks
REFERENCE:	LO000132, Revision 9, Table 1, Page 30 of 31
SOURCE:	New Question – RO Tier 2, Group 1
LEARNING OBJECTIVE:	5943 – List the scrams and rod blocks generated by the SRM system. Include the setpoint for each and when they are bypassed.
RATING:	1
ATTACHMENTS:	None
JUSTIFICATION:	All IRM channels that are not in BYPASS must be on Range 8, or higher, for the SRM rod block to be bypassed. Therefore, all 8 IRMs must be on range 8 or higher and the correct answer is D.
10CFR55 BASIS:	10CFR55.41 (7)
COMMENTS:	Q 3

All the controls and instrumentation for the Automatic Depressurization System (ADS) are in their normal positions and are operable.

With reactor water level at –100 inches and going down, ADS Channel A will actuate:

A. immediately if the Channel A ADS MANUAL INITIATION switch is armed and depressed.

B. 105 seconds after the Channel A ADS MANUAL INITIATION switch is armed and depressed.

C. immediately upon reactor water level reaching Level 1 if LPCS is running.

D. 105 seconds after reactor water level reaching Level 1 if LPCS is running.

ANSWER:	D ✓
QUESTION TYPE:	RO
KA# & KA VALUE:	239002/A2.04 & 4.1, SRVs/ADS actuation
REFERENCE:	LO000186, Revision 12, Page 29
SOURCE:	New Question – RO Tier 2, Group 1
LEARNING OBJECTIVE:	5070 – State the interlocks that must be satisfied prior to an automatic or manual initiation of ADS.
RATING:	2
ATTACHMENTS:	None
JUSTIFICATION:	Answers A and B are incorrect because ADS Channel A cannot be initiated unless LPCS or RHR A is running. Answer C is incorrect because there is a 105 second time delay from when water level reaches level 1. Answer D is correct because one of the Division 1 low pressure ECCS pumps is running, the reactor has reached level 1, and the 105 second time delay has expired.
10CFR55 BASIS:	10CFR55.41 (7)
COMMENTS:	Q 4

The EOPs direct the operator to verify RWCU has isolated after SLC is initiated.

If SLC is initiated:

A. the outboard primary containment isolation valve RWCU-V-4 automatically closes.

B. the inboard primary containment isolation valve RWCU-V-1 automatically closes.

C. both the inboard and outboard primary containment isolation valves RWCU–V-1 and RWCU-V-4 automatically close.

D. the outboard primary containment isolation valve RWCU-V-1 automatically closes if SLC A is initiated and the inboard primary containment isolation valve RWCU-V-4 automatically closes if SLC B is initiated.

ANSWER:	A
QUESTION TYPE:	RO
KA# & KA VALUE:	211000/A4.06 & 3.9 – SLC/RWCU Isolation
REFERENCE:	SD000190, Revision 9, page 11 of 24.
SOURCE:	New Question – RO Tier 2, Group 1
LEARNING OBJECTIVE:	5035 – List all the RWCU system and filter demineralizer isolations including setpoints and valves affected.
RATING:	1
ATTACHMENTS:	None
JUSTIFICATION:	Only answer A is correct because only RWCU-V-4 automatically isolates when either train of SLC is initiated.
10CFR55 BASIS:	10CFR55.41 (7)
COMMENTS:	Q 5

The function of the "INVERTER TO LOAD TRANSFER" pushbutton on E-IN-3A is to:

A. shift the static switch to the onservice inverter.

B. isolate the alternate power supply from the static switch.

C. shift the static switch to align to the alternate power source.

D. isolate the onservice power supply from the static switch.

ANSWER:	A✓
QUESTION TYPE:	RO
KA# & KA VALUE:	262002/A4.01 & 2.8 – UPS (AC/DC) – Transfer from alternate source to normal source.
REFERENCE:	LO000194, Revision 8, pages 16 and 17.
SOURCE:	New Question – RO Tier 2, Group 1
LEARNING OBJECTIVE:	5893 – State the function of the following with respect to IN-2(3): (b) Inverter to Load Transfer pushbutton.
RATING:	2
ATTACHMENTS:	None
JUSTIFICATION:	The function of the Inverter to Load Transfer pushbutton is to shift the station switch to align to the onservice inverter. Therefore, answer A is correct.
10CFR55 BASIS:	10CFR55.41 (7)
COMMENTS:	Q 6

The plant is in Mode 4 with RHR in service for reactor cooldown. Reactor temperature is 220 degrees and pressure is 30 psig when Standby Service Water (SSW) is lost.

Which of the following can be used for Alternate Shutdown Cooling?

A. Reactor Core Isolation Cooling (RCIC)

B. CST Condensate Storage and Transfer

C. Fuel Pool Cooling and Cleanup

D. RHR and an open SRV

ANSWER:	D
QUESTION TYPE:	RO
KA# & KA VALUE:	205000/K5.03 & 2.8 – Shutdown Cooling/Heat Removal Systems
REFERENCE:	LO000198, Page 6
SOURCE:	New Question – RO Tier 2, Group 1
LEARNING OBJECTIVE:	5774 – Describe the flowpath within the appropriate RHR system for each of the following: (i) alternate shutdown cooling
RATING:	2
ATTACHMENTS:	None
JUSTIFICATION:	RCIC cannot be used because reactor pressure is too low. Answers B and C are incorrect because those systems do not connect to the reactor. D is correct since RHR can be lined up from the suppression pool to the reactor with an SRV open. The suppression pool then becomes the heat sink.
10CFR55 BASIS:	10CFR55.41 (5)
COMMENTS:	Q 7

Standby Gas Treatment (SGT) is in operation following a LOCA.

The electric heaters in the SGT HEPA charcoal adsorber units should be:

A. off to preclude a fire in the charcoal adsorber unit.

B. cycling on and off to minimize the amount of moisture in the charcoal adsorber unit.

C. continuously on in order to improve the ability of the charcoal adsorber unit to remove Iodine 135.

D. continuously on in order to improve the ability of the charcoal adsorber unit to remove all radioactive halogens.

ANSWER:	B
QUESTION TYPE:	RO
KA# & KA VALUE:	261000/K4.05 & 2.6 – SGTS/Fission product gas removal.
REFERENCE:	LO000161, Revision 11, Pages 7 and 16. LO000126, Revision 8, pages 8 and 10
SOURCE:	New Question – RO Tier 2, Group 1
LEARNING OBJECTIVE:	5825 – State the purpose(s) of the following components in the SGT system: (a.) Electric heating coils.
RATING:	2
ATTACHMENTS:	None
JUSTIFICATION:	The electric heaters cycle on and off to reduce the moisture content of the air entering the charcoal adsorbers. The dryer air increases the efficiency of the units in the adsorbtions of all radioactive isotopes. Therefore, the correct answer is B.
10CFR55 BASIS:	10CFR55.41 (5)
COMMENTS:	Q 8

RCIC is in operation taking a suction from the suppression pool and discharging to the reactor vessel. The RCIC flow controller is in automatic and is set at 150 gpm.

The expected system response to an operator opening the minimum flow isolation valve (RCIC-V-19) would be:

A. flow to the reactor will decrease and flow through the min flow line will increase. Total system flow will stabilize at 150 gpm.

B. flow to the reactor will remain constant and flow through the min flow line will increase. Total system flow will stabilize at more than 150 gpm.

C. flow to the reactor will increase and flow through the min flow line will increase. Total system flow will stabilize at more than 150 gpm.

D. flow to the reactor will remain constant and flow through the min flow line will remain at zero. Total system flow will stabilize at 150 gpm.

ANSWER:	B
QUESTION TYPE:	RO
KA# & KA VALUE:	217000/K5.02 & 3.1 – RCIC/Flow indications
REFERENCE:	SD000180, Revision 12, Pages 4 and 6.
SOURCE:	New Question – RO Tier 2, Group 1
LEARNING OBJECTIVE:	5726 – Explain the normal and test flow paths in the RCIC System.
RATING:	3
ATTACHMENTS:	None
JUSTIFICATION:	The flow element for the RCIC flow controller is downstream of the min flow valve and the min flow discharges to the suppression pool. Therefore, flow to the reactor will remain at the flow controller setpoint (150 gpm) irrespective of min flow line status. When the min flow isolation valve is opened, total system flow will increase due to the new flowpath introduced to the system that is not seen by the flow control valve. Therefore, the correct answer is B.
10CFR55 BASIS:	10CFR55.41 (5)
COMMENTS:	Q 9

Reactor power is 43 percent when the reactor operator withdraws control rod 23-18 from notch 34 to notch 36.

A failed open RPIS reed switch at notch 36 would result in a(n):

A. RPIS LOGIC FAILURE that would require the 23-18 rod be bypassed in RPIS for further rod movement.

B. RPIS DATA FAULT that would require rod 23-18 be bypassed in the rod sequence control system (RSCS) for further rod movement.

C. blank position indication for control rod 23-18 on the full core display, but would not require the rod be bypassed for rod movement.

D. "XX" being displayed for control rod 23-18 on the full core display, but would not require the rod be bypassed for rod movement.

ANSWER:	C
QUESTION TYPE:	RO
KA# & KA VALUE:	214000/A2.01 & 3.5 – RPIS/Failed reed switches
REFERENCE:	LO000160, Revision 10, Various Pages. LO000148, Revision 10, Various Pages.
SOURCE:	New Question – RO Tier 2, Group 2
LEARNING OBJECTIVE:	7689 – Predict the effect(s) the following failures will have on the RSCS system: (b.) RPIS
RATING:	1
ATTACHMENTS:	None
JUSTIFICATION:	A failed RPIS reed switch will result in a blank window on the full core display, an RPIS DATA FAULT indication, and a RPIS LOGIC FAILURE for that rod. However, with reactor power above the low power setpoint (20 percent power), all rod blocks are bypassed. Therefore, the correct answer is C.
10CFR55 BASIS:	10CFR55.41 (2)
COMMENTS:	Q 10

A precaution contained in OSP-RSCS-C401, RSCS CFT Prior to Reactor Startup, prohibits selecting a bypassed control rod to verify RSCS operability.

Which of the following describes the method used to verify the selected control rod is available for checking RSCS Operability?

A. Depress the "RODS FULL IN/BYPASS" pushbutton to illuminate the BYPASS light. All bypassed control rods are indicated by a red LED.

B. Depress the "ALL RODS/FREE RODS" to illuminate the FREE RODS light. All bypassed control rods are indicated by a flashing yellow LED.

C. If a bypassed control rod is selected on the rod select matrix, the RSCS INOP annunciator illuminates.

D. If a bypassed control rod is selected on the rod select matrix, the white position indication does not illuminate on the four rod display.

ANSWER:	A✓
QUESTION TYPE:	SRO/RO
KA# & KA VALUE:	201004/A4.01 & 3.4 – Rod Sequence Control System/System bypass switches.
REFERENCE:	LO000160, Revision 9, Page 7.
SOURCE:	Bank Question LO898 –Used on 2002 Exam – RO Tier 2, Group 2
LEARNING OBJECTIVE:	5807 – State the function of the following indications and controls on the RSCS operator console: RODS FULL IN/BYPASS.
RATING:	2
ATTACHMENTS:	None
JUSTIFICATION:	Answer B is incorrect because a flashing yellow LED indicates the rod is selected on the rod select matrix. Answer C is incorrect because selection of a bypassed control rod does not cause an INOP RSCS. Answer D is incorrect because selection of a bypassed control rod does not cause the full core indication to change. Answer A is correct because the purpose of the BYPASS position is to cause all bypassed control rods to indicate as stated.
10CFR55 BASIS:	10CFR55.41 (7)
COMMENTS:	Q 11

A loss of power to Reactor Protection Bus "B" will result in:

A. a closure of the inboard MSIVs.

B. an isolation of the TIP system.

C. an isolation of the RBHVAC.

D. a closure of the outboard MSIVs.

ANSWER:	B.
QUESTION TYPE:	RO
KA# & KA VALUE:	223002/K3.21 & 2.6 – PCIS/Nuclear Steam Shutoff – Traversing In-Core Probe system.
REFERENCE:	LO000155, Revision 10, Page 13. LO000173, Revision 9, Page 13.
SOURCE:	New Question – RO Tier 2, Group 1
LEARNING OBJECTIVE:	5604 – List the actions that would occur on a loss of one or both RPS power supplies to the NS4 logic. 5597 – Given the number and name of any of the 7 NS4 isolation groups, list the isolation signals and setpoints (except room and ventilation temps) for that group.
RATING:	2
ATTACHMENTS:	None
JUSTIFICATION:	The TIP system is part of the Group 4 (non-essential loads) isolation system and will close in response to a LOCA signal. Therefore, only answer B is correct.
10CFR55 BASIS:	10CFR55.41 (7)
COMMENTS:	Q 12

Table 19 from Emergency Operating Procedure 5.2.1, "Primary Containment Control," provides a diagram of a Mark II containment illustrating hydrogen and oxygen combustible limits in four regions (Table 19 is attached for reference).

To be at or above the combustible limits requires that hydrogen and oxygen be at or above 6% and 5% respectively in:

A. one or more of the four regions.

B. two or more of the four regions.

C. three of more of the four regions.

D. all four regions.

ANSWER:	A.
QUESTION TYPE:	RO
KA# & KA VALUE:	500000/2.4.20 & 3.3 – High Containment Hydrogen Concentration/Knowledge of Operational Implications of EOP Warnings/Cautions/and notes.
REFERENCE:	Procedure 5.0.10, Revision 7, Page 268.
SOURCE:	New Question – RO Tier 1 Group 2
LEARNING OBJECTIVE:	Check at Facility
RATING:	2
ATTACHMENTS:	EOP Table 19.
JUSTIFICATION:	If the hydrogen/oxygen concentrations are exceeded in any one region, than the combustible limits have been exceeded. Therefore, answer A is correct.
10CFR55 BASIS:	10CFR55.41 (10)
COMMENTS:	Q 13

PC Gas

ABOVE COMBUST

H-1
IF PC hydrogen and oxygen monitoring systems not available THEN notify chemist to sample PC hydrogen and oxygen PPM 12.17.3 — U

PPM 5.8.1 provides guidance for operation of hydrogen and oxygen monitoring under post-LOCA conditions

H-2
IF PC hydrogen and oxygen either:
- are above Combustible Limits, **Table 19**
  OR
- cannot be determined less than Combustible Limits, **Table 19**

THEN T

H-3
Perform Concurrently to Monitor and Control Drywell and WW Hydrogen Concentration

H-4 **WHEN** drywell hydrogen reaches 0.5 %

H-5 Is drywell oxygen below 4.8% — YES: go to H-7; NO: go to H-6

H-6 Is drywell hydrogen below 6% — YES: go to H-7; NO: go to H-8

H-7
- Initiate CAC with suction from drywell
- Operate drywell recirculation fans

H-8 **WHEN** drywell hydrogen reaches 6% AND drywell oxygen reaches 4.8%

H-9 Secure all CAC taking suction on drywell

H-10 **WHEN** WW hydrogen reaches 0.5 %

H-11 Is WW oxygen below 4.8% — YES: go to H-13; NO: go to H-12

H-12 Is WW hydrogen below 6% — YES: go to H-13; NO: go to H-17

H-13 Initiate CAC with suction from WW

H-14 Can CAC be initiated with suction from WW — YES: go to H-17; NO: go to H-15

H-15 **WHEN** drywell hydrogen is below 6% AND drywell oxygen is below 4.8%

H-16 Initiate CAC with suction from drywell

H-17 **WHEN** WW hydrogen reaches 6% AND WW oxygen reaches 4.8%

H-18 Secure all CAC taking suction on wetwell

WW level below 51 ft

WHEN level cannot be ...intained below 51 ft

...op drywell sprays

...ore ...ured, ...into ... ...ources ...C excep... ...ystems ...hutdown the reactor.

51 ft

H-19
IF PC hydrogen and oxygen monitoring systems not available THEN notify chemist to sample PC hydrogen and oxygen PPM 12.17.3

IF PC hydrogen and oxygen are below Combustible Limits, **Table 19** THEN U

H-20
- S...
- S... r...

H-22
IF WW pressure drops below **1.68 psig** THEN stop wetwell sprays

H-24
Vent... hydr... Limi...

H-29
IF drywell pressure drops below **1.68 psig** THEN stop spray...

H-32
Sp... (D...

19 Combustible Limits

6% H_2 and 5% O_2	Drywell	______% H_2
6% H_2 and 5% O_2 / 5% O_2 and 6% H_2		______% O_2
5% O_2 and 6% H_2 / 6% H_2 and 5% O_2	WW	______% H_2
6% H_2 and 5% O_2		______% O_2

The plant has tripped from full power due to a loss of both reactor recirc pumps. The CRS has directed the reactor operator to increase reactor water level to 50 inches from its present level of 10 inches. Plant conditions are:

- Both reactor recirc pumps are shut down
- Reactor feed pump A is running
- RPV level control is on the Startup Level Controller in automatic
- Reactor pressure is 900 psig
- The turbine bypass valves are closed but available for pressure control

In the current plant configuration, actual RPV level is most accurately displayed by the:

A. narrow range reactor water level indicators.

B. wide range reactor water level indicators.

C. shutdown range reactor water level indicators.

D. upset range reactor water level indicators.

ANSWER:	B /
QUESTION TYPE:	RO
KA# & KA VALUE:	259001/A3.04 & 3.8 – Reactor Feedwater/Reactor Water Level.
REFERENCE:	SD000126, Revision 9, Figures 2, 2A, 2B, and 2C.
SOURCE:	New Question – RO Tier 2, Group 2
LEARNING OBJECTIVE:	5582 – List the calibration conditions and nominal ranges for each of the five ranges of level instruments.
RATING:	2
ATTACHMENTS:	None
JUSTIFICATION:	Answers A, C, and D are incorrect because all require the reactor recirc pumps to be in operation to meet their calibration conditions. Answer B is correct because it is calibrated for the reactor recirc pumps to be not running and provides the appropriate indication for the current plant status.
10CFR55 BASIS:	10CFR55.41 (7)
COMMENTS:	Q 14

The Emergency Operating Procedures caution against operating the RCIC turbine at speeds below 2100 RPM.

One of the E.O.P. bases for ~~this caution is that~~ not operating the RCIC ... at speeds below 2100 RPM:

A. the RCIC pump may overheat due to low flow conditions.

B. there may be increased turbine blade erosion and/or damage due to low steam pressure/high steam flow through the turbine.

C. the potential exists for water in the turbine exhaust line damaging the exhaust line check valves.

D. the RCIC turbine may trip on high exhaust pressure.

ANSWER:	C
QUESTION TYPE:	RO
KA# & KA VALUE:	217000/G2.4.20 & 3.3 – RCIC – Knowledge of Operational Implications of EOP Warnings/Cautions/and notes.
REFERENCE:	Procedure 5.0.10, revision 7, page 70.
SOURCE:	New Question – RO Tier 2, Group 1
LEARNING OBJECTIVE:	8495 - Given a list, identify three possible results of operating RCIC below its minimum turbine speed.
RATING:	2
ATTACHMENTS:	None
JUSTIFICATION:	The bases for the 2100 RPM caution is to ensure there is sufficient hydraulic pressure for throttle operation, ensure the speed is high enough for turbine lubrication from the turbine shaft driven pumps, and prevent damage to the exhaust check valves. Therefore the correct answer is C.
10CFR55 BASIS:	10CFR55.41 (10)
COMMENTS:	Q 15

9

The Emergency Operating Procedures direct the operating crew to maintain reactor pressure below the Heat Capacity Temperature Limit. This limit is a function of wetwell level, wetwell temperature, and RPV pressure.

The bases of the Heat Capacity Temperature Limit is to ensure the:

A. Pressure Suppression Pressure (PSP) limit is not exceeded.

B. SRV Tail Pipe Level Limit (SRVTPLL) is not exceeded.

C. Primary Containment Pressure Limit (PCPL) is not exceeded.

D. Wetwell Spray Initiation Pressure (WSIP) is not exceeded.

ANSWER:	C
QUESTION TYPE:	RO
KA# & KA VALUE:	295030/EK1.03 & 3.8 – Low Suppression Pool Level/Heat Capacity
REFERENCE:	Procedure 5.0.10, Revision 7, Page 77.
SOURCE:	New Question – RO Tier 1, Group 1
LEARNING OBJECTIVE:	CAF
RATING:	1
ATTACHMENTS:	None
JUSTIFICATION:	The Heat Capacity Temperature Limit (HCTL) is a function of wetwell temperature and RPV pressure. The bases of this limit is to ensure the Primary Containment Pressure Limit is not exceeded should an RPV blowdown be required. Therefore, answer C is correct.
10CFR55 BASIS:	10CFR55.41 (10)
COMMENTS:	Q 16

Entry into the Emergency Operating Procedures is required when:

A. drywell temperature reaches 130 degrees.

B. primary containment hydrogen concentration reaches 3.0 %.

C. reactor pressure reaches 1060 psig.

D. wetwell temperature reaches 80 degrees.

ANSWER:	C
QUESTION TYPE:	RO
KA# & KA VALUE:	295007/G2.4.1 & 4.3 – High Reactor Pressure/Knowledge of EOP entry conditions and immediate action steps.
REFERENCE:	Procedure 5.0.10, Revision 7, Page 78.
SOURCE:	New Question – RO Tier 1, Group 2
LEARNING OBJECTIVE:	CAF
RATING:	1
ATTACHMENTS:	None
JUSTIFICATION:	None of the parameters listed meet an EOP entry condition with the exception of answer C. A reactor pressure of 1060 requires entry into EOP 5.1.1 – RPV Control. Therefore the correct answer is C.
10CFR55 BASIS:	10CFR55.41 (10)
COMMENTS:	Q 17

A reactor operator is in the process of placing RHR loop A into the shutdown cooling mode of operation. When an attempt is made to open the Shutdown Cooling Suction valve (RHR-V-6A), it won't open.

The operator would not be able to open RHR-V-6A if the RHR:

A. Shutdown Cooling Inboard Isolation valve (RHR-V-9) is closed.

B. Pump Suction from Suppression Pool valve (RHR-V-4A) is closed.

C. Suppression Pool Cooling/Test Return valve (RHR-V-24A) is open.

D. Upper Drywell Spray Inboard Isolation valve (RHR-V-17A) is open.

ANSWER:	C✓
QUESTION TYPE:	RO
KA# & KA VALUE:	205000/A3.01 & 3.2 – Shutdown Cooling/Valve Operation
REFERENCE:	SD000198, Revision 11, Pages 12-14.
SOURCE:	New Question – RO Tier 2, Group 1
LEARNING OBJECTIVE:	5781 – List the interlocks and trips associated with the following RHR system components: (c.) RHR-V-6A/B
RATING:	1
ATTACHMENTS:	None
JUSTIFICATION:	Before the operator can open RHR-V-6A, valves V-4A, V-24A, V-27A must all be closed. These are the only interlocks that will prevent V-6A from opening. Answers A and D are incorrect because these valves are not part of the logic for V-6A. Answer B is incorrect because V-4A must be closed before V-6A can be opened. Answer C is correct because V24A must be closed in order to open V-6A.
10CFR55 BASIS:	10CFR55.41 (7)
COMMENTS:	Q 18

With the Reactor Protection System (RPS) MG SET TRANSFER SWITCH (on P-610) in the ALT A position:

A. RPS busses A and B are powered from the A RPS MG set.

B. RPS busses A and B are powered from the B RPS MG set.

C. RPS bus A is powered from the A RPS MG set and RPS bus B is powered from an alternate power supply.

D. RPS bus A is powered from an alternate power supply and RPS bus B is powered from the B RPS MG set.

ANSWER:	D
QUESTION TYPE:	RO
KA# & KA VALUE:	212000/K2.01 & 3.2 – Reactor Protection System/RPS motor generator sets.
REFERENCE:	SD000161, Revision 12, Drawing 4.
SOURCE:	New Question – RO Tier 2, Group 1
LEARNING OBJECTIVE:	5961 – Describe the electrical alignment of the RPS system when the MG SET TRANSFER SWITCH (on P-601) is in: (b.) ALT A
RATING:	2
ATTACHMENTS:	None
JUSTIFICATION:	With the MG SET TRANSFER SWITCH in the ALT A position, the A RPS bus is electrically powered from the alternate power supply and the B RPS bus is powered from the normal power supply (B RPS MG SET). Answer A and B are incorrect because it is not possible to power both RPS busses from the same power source. Answer C is incorrect because RPS bus A is on alternate power – not the MG set. Therefore, answer D is correct.
10CFR55 BASIS:	10CFR55.41 (7)
COMMENTS:	Q 19

The reactor is operating at 98 percent power with a 2 gpm packing leak on RRC-V-67A, RRC-P-1A discharge valve. Drywell pressure has increased to 2.2 psig. ⇒ "F"

beyond

Which of the following will automatically ~~isolate to~~ prevent the further spread of radioactivity ~~from~~ the reactor building?

A. FDR-V-219 & 220, RHR A/HPCS sump outlet

B. EDR-V-394 & 395, EDR-P-5 discharge to the WCT

C. FSR-V-3 & 4, Drywell isolation valves isolate

D. EDR-V-19 & 20, Drywell isolation valves

ANSWER:	A
QUESTION TYPE:	RO
KA# & KA VALUE:	268000/K1.06 & 2.9 – Radwaste/Drywell floor drains
REFERENCE:	SD000173
SOURCE:	New Question – RO Tier 2, Group 2.
LEARNING OBJECTIVE:	5333 – List the isolation signals and setpoints for the following valves: a. FDR-V-219 b. FDR-V-220
RATING:	2
ATTACHMENTS:	None
JUSTIFICATION:	Since the leak is a packing leak in the drywell it is floor drain leakage. B and D are incorrect because they are Equipment drain valves. The question asks what prevents further spread from the reactor building so C is incorrect because it only limits the spread from the drywell not the reactor building. A is correct because the valves isolate the FDR system from the radwaste building.
10CFR55 BASIS:	10CFR55.41 (13)
COMMENTS:	Q 20

Placing the main turbine BEARING OIL AND SEAL OIL BACKUP PUMPS control switch in the START position will cause:

A. both the Bearing Oil and Seal Oil backup pumps to start.

B. both the Bearing Oil and Seal Oil backup pumps to start if there is a low main lube oil supply header pressure signal.

C. each of the pumps to start only if there is a low oil pressure on that pump's respective discharge header.

D. the pump selected on the BEARING OIL/SEAL OIL BACKUP PUMP SELECT switch to start.

ANSWER:	A
QUESTION TYPE:	RO
KA# & KA VALUE:	245000/A4.08 & 2.7 – Main Turbine Gen./Aux./Turbine Oil Pressure
REFERENCE:	SD000135, Revision 8, Page 16.
SOURCE:	New Question – RO Tier 2, Group 2
LEARNING OBJECTIVE:	7011 – Describe the automatic features with the following pumps (setpoints not required): (a.) Bearing Oil Pump and Seal Oil Backup Pump. 7012 – Briefly describe the operation of the turbine oil pumps during turbine startup, shutdown, and normal operation.
RATING:	1
ATTACHMENTS:	None
JUSTIFICATION:	Answers B and C are incorrect because the referenced switch will cause both pumps to start regardless of system oil pressure. Answer D is incorrect because there is no select switch as suggested by the answer. Therefore, answer A is correct.
10CFR55 BASIS:	10CFR55.41 (4)
COMMENTS:	Q 21

Off-Gas (OG) Adsorber Bypass valve OG-V-45 will close and Adsorber Inlet valves OG-V-51A and B will open if the bypass valve control switch is in AUTO and:

A. one OG Post Treatment Process Radiation Monitor reaches the HI RADIATION setpoint.

B. two OG Post Treatment Process Radiation Monitors reach the HI RADIATION setpoint.

C. one of the OG Post Treatment Process Radiation Monitor reaches the HI HI RADIATION setpoint.

D. two of the OG Post Treatment Process Radiation Monitors reach the HI HI RADIATION setpoint.

ANSWER:	A
QUESTION TYPE:	RO
KA# & KA VALUE:	271000/A1.12 & (3.5) Off Gas/Process radiation monitoring indications
REFERENCE:	LO000187, Revision 10, Page 24.
SOURCE:	New Question – RO Tier 2, Group 2.
LEARNING OBJECTIVE:	5620 – List the OG system response to increasing Post Treatment Radiation.
RATING:	1
ATTACHMENTS:	None
JUSTIFICATION:	If one of the OG Post Treatment Process Radiation Monitors reaches the HI RADIATION setpoint the referenced adsorber valves will shift positions. Therefore, answer A is correct.
10CFR55 BASIS:	10CFR55.41 (5)
COMMENTS:	Q 22

A fuel cell in the reactor is comprised of four fuel assemblies around a control rod blade.

An improperly orientated fuel assembly within a fuel cell would be indicated by:

A. a fuel assembly identification number that is readable from the center of the fuel cell.

B. a boss on a fuel assembly bail handle pointing toward the outer edge of the fuel cell.

C. a fuel assembly spring clip that is at the center of the fuel cell.

D. fuel channel spacer buttons directly opposing each other within the fuel cell.

ANSWER:	B
QUESTION TYPE:	RO
KA# & KA VALUE:	234000/K5.05 & 3.0 – Fuel Handling Equipment/Fuel Orientation.
REFERENCE:	SD000207, Revision 10, Page 37.
SOURCE:	New Question – RO Tier 2, Group 2
LEARNING OBJECTIVE:	7698 – Describe how proper fuel location and orientation are verified.
RATING:	1
ATTACHMENTS:	None
JUSTIFICATION:	Proper fuel assembly orientation within a fuel cell is indicated by assembly identification numbers that are readable from the center of the cell, bail handle bosses that point toward the center of the cell, assembly spring clips at the center of the cell, and fuel channel spacer buttons that oppose each other. All the answers provided indicate proper fuel assembly orientation with the exception of answer B. The bail handle boss should point toward the center of the cell if the assembly is properly installed. Therefore, the correct answer is B.
10CFR55 BASIS:	10CFR55.41 (5)
COMMENTS:	Q 23

The plant is operating at rated thermal power when a failure in the Feedwater Heater 1A level control system causes the heater drain valves to close. Subsequently, a high water level in Feedwater Heater 1A results in the automatic closure of the heater condensate and extraction steam isolation valves.

After these isolation valves close, Feedwater Heater:

A. 1B will still be in service.

B. 1C will still be in service.

C. 2A will still be in service.

D. 3A will still be in service.

ANSWER:	D
QUESTION TYPE:	RO
KA# & KA VALUE:	256000/K6.06 & 3.3 – Reactor Condensate System/Reactor Feedwater System
REFERENCE:	LO000134, Revision 10, Page 24.
SOURCE:	New Question – RO Tier 2, Group 2.
LEARNING OBJECTIVE:	5177 – Explain how the condensate system is affected by a high water level trip in the 1st stage low pressure feedwater heater.
RATING:	2
ATTACHMENTS:	None
JUSTIFICATION:	When Feedwater Heaters 1A, 1B, or 1C have a high water level, Feedwater Heaters 1A/B/C and Feedwater Heaters 2A/B/C isolate. Therefore answer D is correct.
10CFR55 BASIS:	10CFR55.41 (7)
COMMENTS:	Q 24

The control room crew is increasing reactor power after an outage and have established the following plant conditions:

- Reactor power is 42 percent and is increasing at 5 percent per hour
- The main turbine DEH system is in the TURBINE FOLLOW REACTOR MANUAL mode (Mode 4)
- DEH pressure setpoint is set at 960 psig
- Generator load is 512 megawatts
- The MWe demand signal is set at 1250 MWe
- Reactor Feed Pump A is in service

During a load shed event, turbine speed increases from 1800 RPM to 1860 RPM.

In response to the increased main turbine speed, the:

A. governor valves throttle down to restore turbine speed to 1800 RPM and the bypass valves throttle open to maintain 960 psig pressure. Steady state reactor power remains relatively constant.

B. governor valves throttle down to restore turbine speed to 1800 RPM. Reactor power increases and then decreases to a lower steady state value.

C. governor valves remain stationary and the bypass valves throttle open to restore turbine speed to 1800 RPM. Steady state reactor power remains relatively constant.

D. governor valves close and the bypass valves throttle open to maintain pressure at 960 psig.

ANSWER:	D
QUESTION TYPE:	RO
KA# & KA VALUE:	241000/K3.01 & 4.1 – Reactor Turbine Pressure Regulating System/Reactor Power
REFERENCE:	SD000146, Revision 8, Page20.
SOURCE:	New Question – RO Tier 2, Group 2.
LEARNING OBJECTIVE:	None Found for the DEH Overspeed Protection Circuit (OPC)
RATING:	3
ATTACHMENTS:	None
JUSTIFICATION:	When turbine speed reaches 103% of rated (1854 RPM), the OPC trips the emergency DEHC trip header, which trips the turbine governor valves. Because the reactor is above 30 %

	power, a turbine trip causes an RPS scram signal. Therefore, the correct answer is D.
10CFR55 BASIS:	10CFR55.41 (7)
COMMENTS:	Q 25

APRM Channel D does not appear to be in agreement with the other APRMs and as part of the initial follow up, the Control Room Supervisor (CRS) directs a reactor operator to verify the number of LPRMs bypassed on APRM Channel D.

The operator goes to the APRM back panel and places the Meter Function Switch for APRM Channel D in the COUNT position. The meter now reads 95.

The operator should now report to the CRS there are:

A. 2 LPRMs bypassed in APRM Channel D.

B. 3 LPRMs bypassed in APRM Channel D.

C. 4 LPRMs bypassed in APRM Channel D.

D. 5 LPRMs bypassed in APRM Channel D.

ANSWER:	B
QUESTION TYPE:	RO
KA# & KA VALUE:	215005/K1.04 & 3.3 – APRM/LPRM – LPRM Channels
REFERENCE:	SD000149, Revision 10, pages 5 and 15.
SOURCE:	New Question – RO Tier 2, Group 1
LEARNING OBJECTIVE:	5095 – Given a list of plant systems, explain how they interrelate with the APRM system: (LPRM) 5505 – Describe the physical connection and/or cause and effect relationship between LPRMs and: (APRMs)
RATING:	3
ATTACHMENTS:	None
JUSTIFICATION:	APRM Channel D has 22 LPRMs attached to it. When the Meter Function Switch is placed in the count position, each operable LPRM moves the meter up 5 units. With the meter indicating 95, there are 19 operable LPRMs (95/5=19). Since there are 22 total, three are bypassed.
10CFR55 BASIS:	10CFR55.41 (2 through 9)
COMMENTS:	Q 26

The SRM scram function is normally bypassed unless:

A. a dynamic shutdown margin determination is being performed.

B. any core alterations are in progress.

C. the Mode Switch is in STARTUP and the SRMs are in the core.

D. any IRM is on Range 1, 2, or 3.

ANSWER:	A
QUESTION TYPE:	RO
KA# & KA VALUE:	215004/K6.05 & 2.6 – Source Range Monitor/Trip Units
REFERENCE:	SD000138, Revision 8, Page 24.
SOURCE:	New Question – RO Tier 2, Group 1
LEARNING OBJECTIVE:	5943 – List the scrams and rod blocks generated by the SRM system. Include the setpoint for each and when they are bypassed.
RATING:	1
ATTACHMENTS:	None
JUSTIFICATION:	The SRM scram trip unit is required to be operable for the initial plant startup and for dynamic shutdown margin determinations. Therefore, the correct answer is A.
10CFR55 BASIS:	10CFR55.41 (7)
COMMENTS:	Q 27

The Safety Relief Valves (SRVs) associated with the Automatic Depressurization System (ADS) are equipped with a 42 gallon nitrogen accumulator. 7

In the worse case design scenario (maximum drywell pressure, 0 psig reactor pressure) with a loss of Containment Instrument Air, ~~this~~ the accumulator is sized to actuate ~~the~~ a SRV: Safety Relief Valve

A. one time.

B. two times.

C. three times.

D. four times.

ANSWER:	A
QUESTION TYPE:	RO
KA# & KA VALUE:	218000/K1.06 & 3.9 – ADS/Safety/Relief Valves
REFERENCE:	SD000128, Revision 8, Pages 7 and 8.
SOURCE:	New Question – RO Tier 2, Group 1
LEARNING OBJECTIVE:	5528 – Describe the physical connection and/or cause-and-effect relationship between the SRVs and: f. ADS accumulators
RATING:	1
ATTACHMENTS:	None
JUSTIFICATION:	The nitrogen accumulators are provided to actuate the ADS SRV one time under design conditions. Therefore the correct answer is A.
10CFR55 BASIS:	10CFR55.41 (7)
COMMENTS:	Q 28

Some of the Automatic Depressurization System (ADS) Safety Relief Valves (SRVs) can be controlled from the remote shutdown panel.

When one of these ADS SRVs is opened from the remote shutdown panel, the open indication reflects:

A. a thermocouple in the SRV tailpipe sensing an increased tailpipe temperature.

B. a pressure switch in the SRV tailpipe sensing an increased tailpipe pressure.

C. an LVDT (Linear Variable Differential Transducer) internal to the SRV sensing the valve stem in the open position.

D. a power sensor sensing the solenoid that opens the SRV is energized.

ANSWER:	D
QUESTION TYPE:	RO
KA# & KA VALUE:	218000/K6.07 & 3.4 – ADS/Primary containment instrumentation.
REFERENCE:	SD000128, Revision 8, Page 12 and 13. SD000210, Revision 6, Page 17.
SOURCE:	New Question – RO Tier 2, Group 1
LEARNING OBJECTIVE:	5528 – Describe the physical connection and/or cause-and-effect relationship between the SRVs and: g. Remote Shutdown Panel.
RATING:	1
ATTACHMENTS:	None
JUSTIFICATION:	The open indication for the SRVs controlled from the remote shutdown panel reflects the solenoid that should open the valve is electrically energized. The other answers reflect containment instrumentation that does not display on the remote shutdown panel. Therefore the correct answer is D.
10CFR55 BASIS:	10CFR55.41 (7)
COMMENTS:	Q 29

A complete loss of the Control and Service Air System (CAS) will result in a closure of the:

A. control rod drive hydraulic pressure control valve.

B. RCIC turbine governor valve.

C. MSIVs.

D. feedwater heater air operated drain valves.

ANSWER:	C
QUESTION TYPE:	RO
KA# & KA VALUE:	300000/K3.02 & 3.3 – Instrument Air/Systems having pneumatic valves and controls
REFERENCE:	SD000142, Revision 12, Figure 1. SD000205, Revision 9, Page 21. SD000180, Revision 12, Page 6.
SOURCE:	New Question – RO Tier 2, Group 1
LEARNING OBJECTIVE:	7605 – Determine the affect of a CAS failure on system loads.
RATING:	2
ATTACHMENTS:	None
JUSTIFICATION:	Answers A and B are incorrect because neither valve is air operated. Answer D is incorrect because the feedwater heater drain valves will fail open. Answer C is correct because on a loss of air the MSIV will close due to the closure springs.
10CFR55 BASIS:	10CFR55.41 (7)
COMMENTS:	Q 30

An operator manually initiates the High Pressure Core Spray (HPCS) system using the HPCS Manual Initiation pushbutton.

With the system in a normal standby readiness lineup, the operator should observe the:

A. Division 3 Emergency Diesel Generator Starting.

B. HPCS pump suction valve from the suppression pool (HPCS-V-15) opening.

C. HPCS pump suction valve from the CST (HPCS-V-1) closing.

D. HPCS pump suction valve from the suppression pool (HPCS-V-15) closing.

ANSWER:	A
QUESTION TYPE:	RO
KA# & KA VALUE:	209002/A4.05 & 3.8 – HPCS/Manual Initiation Controls
REFERENCE:	SD000174, Revision 10, Page 8.
SOURCE:	New Question – RO Tier 2, Group 1
LEARNING OBJECTIVE:	5425 – List all actions that will automatically occur when the initiation logic for the HPCS system is met.
RATING:	2
ATTACHMENTS:	None
JUSTIFICATION:	Answers B and D are incorrect because V-15 is not affected by a HPCS initiation signal. C is incorrect since an initiation signal opens V-1. A HPCS initiation signal does start the Division 3 EDG, answer A is correct.
10CFR55 BASIS:	10CFR55.41 (7)
COMMENTS:	Q 31

The removal of a jumper from a safety related DC breaker that is not verified by a work instruction or procedure is required to be:

A. simultaneously verified.

B. independently verified.

C. verified by a qualified craft supervisor.

D. verified by a qualified operator.

ANSWER:	A
QUESTION TYPE:	RO
KA# & KA VALUE:	263000/2.2.13 & 3.6 – DC Electrical Distribution/Knowledge of Tagging and Clearance Procedures
REFERENCE:	Procedure 1.3.64, Revision 6, Page 5, Step 2.1.9.
SOURCE:	New Question – RO Tier 2, Group 1
LEARNING OBJECTIVE:	CAF
RATING:	1
ATTACHMENTS:	None
JUSTIFICATION:	The referenced procedure states the removal of a jumper (safety related or not) requires a simultaneous verification. It further states an independent verification is not required for simultaneously verified components. There is no requirement regarding what skill (Ops, craft, etc) is required to perform the verification. Therefore the correct answer is A.
10CFR55 BASIS:	10CFR55.41 (10)
COMMENTS:	Q 32

Following a small break LOCA, plant conditions are as follows:

- DG-1 is running and providing power for the loads on SM-1
- Off-site power is not available
- RPV pressure is 825 psig
- Drywell pressure is 2.8 psig
- RHR A and LPCS are running
- None of the high pressure injection systems are available
- Suppression pool temperature is approaching the HCTL

The operating crew now initiates ADS.

As RPV pressure goes from 825 psig to atmospheric, the operator should observe:

A. a decreasing DG-1 load and engine speed.

B. an increasing DG-1 load and engine speed.

C. a decreasing DG-1 load and an increasing engine speed.

D. an increasing DG-1 load and a decreasing engine speed.

ANSWER:	D
QUESTION TYPE:	RO
KA# & KA VALUE:	209001/A1.07 & 3.0 – LPCS/Emergency Generator Loading.
REFERENCE:	SD000192, Revision 10 SD000200, Revision 9.
SOURCE:	New Question – RO Tier 2, Group 1
LEARNING OBJECTIVE:	CAF
RATING:	3
ATTACHMENTS:	None
JUSTIFICATION:	When RPV pressure is reduced from 825 psig to atmospheric, flow through the Division 1 ECCS pumps (LPCS/LPCI) will increase from min flow to maximum flow. The significantly higher pump flows will cause an observable increase in the power demand on DG-1. As power demand on the DG increases, engine speed will decrease due to the governor droop circuit. Therefore there will be an increase in DG-1 load and a decrease in engine speed, answer D.
10CFR55 BASIS:	10CFR55.41 (5)
COMMENTS:	Q 33

The Feedwater Level Control System (FWLCS) uses one channel of the nuclear boiler narrow range level instrumentation as an input when in 3 element control. The operator has the ability to select narrow range level instrument channel A or B. Currently, narrow range instrument channel B is selected because channel A has failed downscale. While increasing reactor power from 80 percent, narrow range channel B fails upscale.

With no operator action, the FWLCS will:

A. automatically transfer to narrow range level instrument channel A and RPV level will increase.

B. will remain on narrow range level instrument channel B and RPV level will decrease.

C. automatically transfer to narrow range level instrument channel C and RPV level will remain stable.

D. automatically transfer to narrow range level instrument channel D and RPV level will remain stable.

ANSWER:	C✓
QUESTION TYPE:	RO/SRO
KA# & KA VALUE:	259002/A2.03 & 3.6 – Reactor water level control/Loss of reactor level input.
REFERENCE:	SD000157, Revision 12, Page 4.
SOURCE:	New Question – RO Tier 2, Group 1
LEARNING OBJECTIVE:	LO-5400 – Predict the expected response of the feedwater level control system in both single and three element control, to a failure or malfunction of the following: Loss of the selected RPV level channel.
RATING:	1
ATTACHMENTS:	None
JUSTIFICATION:	When both channels A and B fail, the FWLCS will automatically seclect channel C and RPV level remains stable. Therefore the correct answer is C.
10CFR55 BASIS:	10CFR55.41 (5)
COMMENTS:	Q 34

EOP 5.2.1, Primary Containment Control, states that if wetwell level cannot be maintained above 17.5 feet and RCIC is not needed to 1) restore or maintain adequate core cooling, or 2) prevent a primary containment failure, than RCIC should be shifted to the CST or shutdown. This action is taken to:

A. prevent damage to the RCIC pump due to inadequate pump discharge pressure.

B. minimize suppression pool water inventory loss.

C. maintain suppression pool water level above that needed for staying below the HCTL.

D. prevent vortexing at the suction of RCIC.

ANSWER:	D
QUESTION TYPE:	RO
KA# & KA VALUE:	295030/EK2.02 & 3.7 – Low Suppression Pool Water Level/RCIC: Plant Specific
REFERENCE:	EOP 5.2.1 – Primary Containment Control, Revision 13, Step L-4.
SOURCE:	New Question – RO Tier 1, Group 1
LEARNING OBJECTIVE:	CAF
RATING:	1
ATTACHMENTS:	None
JUSTIFICATION:	The table in EOP 5.2.1 lists the lower level limits for all the ECCS pumps. These lower limits ensure vortexing does not occur at the pump suction strainers in the suppression pool. Therefore, answer D is correct.
10CFR55 BASIS:	10CFR55.41 (10)
COMMENTS:	Q 35

Upon being directed by the Shift Manager to evacuate the control room, one of the reactor operator's immediate actions is to:

A. place the mode switch in any position other than RUN.

B. direct Radiation Protection to perform attachment 7.1 of procedure ABN-CR-EVAC (Control Room Evacuation).

C. arm and depress MSIV Isolation logic A, B, C, and D pushbuttons.

D. direct Security to lock down the control room.

ANSWER:	C
QUESTION TYPE:	RO
KA# & KA VALUE:	295016/2.4.49 & 4.0 – Control Room Abandonment/Ability to perform without reference to procedures those actions that require immediate operation of system components and controls.
REFERENCE:	ABN-CR-EVAC, Revision 7, Page 6, Step 3.0.
SOURCE:	New Question – RO Tier 1, Group 1
LEARNING OBJECTIVE:	CAF
RATING:	1
ATTACHMENTS:	None
JUSTIFICATION:	There are four immediate actions for the operators upon a control room evacuation – place the mode switch in shutdown, notify security to perform attachment 7.1, make a plant announcement, and isolate the MSIVs. Therefore, answer C is correct.
10CFR55 BASIS:	10CFR55.41 (10)
COMMENTS:	Q 36

An operator has been directed to verify a Reactor Water Cleanup system valve line up.

While performing the verification, the position of a manual valve is checked by:

A. turning the valve handwheel in the open direction if verifying the valve is open.

B. turning the valve handwheel in the open direction if verifying the valve is closed.

C. turning the valve handwheel in the closed direction if verifying the valve is open.

D. turning the valve handwheel in either direction if verifying the valve is open.

ANSWER:	C
QUESTION TYPE:	RO
KA# & KA VALUE:	204000/2.1.29 & 3.4 – Reactor Water Cleanup/Knowledge of how to conduct and verify valve lineups.
REFERENCE:	Procedure 1.3.1, Revision 62, Page 61, Step 4.19.1.
SOURCE:	New Question – RO Tier 2, Group 2
LEARNING OBJECTIVE:	CAF
RATING:	1
ATTACHMENTS:	None
JUSTIFICATION:	The referenced procedure states "All physical checks of valve position should be made by manipulation in the close direction." Therefore the correct answer is C.
10CFR55 BASIS:	10CFR55.41 (10)
COMMENTS:	Q 37

During a LOCA event, RHR A has automatically initiated and is running in the LPCI mode. Current plant conditions are:

- Reactor pressure – 100 psig and lowering.
- Reactor level – 0 inches and going up.
- Wetwell temperature – 108 degrees and stable.
- Drywell pressure – 4.8 psig and lowering.

With the plant in this condition, an inadvertent initiation of suppression pool spray is prevented by an ~~interlock that~~ won't allow the operator to open:

A. the Upper Drywell Spray Outboard Isolation valve (RHR-V-16A)

B. the Upper Drywell Spray Inboard Isolation valve (RHR-V-17A).

C. both RHR-V-16A and RHR-V-17A as long as there is a LPCI initiation signal present.

D. ~~both~~ RHR-V-16A and RHR-V-17A as long as the LPCI Injection valve (RHR-V-42A) is open.

ANSWER:	D
QUESTION TYPE:	RO
KA# & KA VALUE:	226001/K4.12 & 2.9 – RHR/LPCI: CTMT Spray Mode/Prevention of inadvertent containment spray activation.
REFERENCE:	SD000198, Revision 11, Page 13/14.
SOURCE:	New Question – RO Tier 2, Group 2
LEARNING OBJECTIVE:	5781 – List the interlocks and trips associated with the following RHR system components: e. RHR-V-16A/B and RHR-V-17A/B.
RATING:	2
ATTACHMENTS:	None
JUSTIFICATION:	The two valves discussed in the four answers can be opened individually in the current plant condition so answers A and B are incorrect. A LPCI signal is required to open both valves so answer C is incorrect. Both valves cannot be opened unless 42A is closed so answer D is correct.
10CFR55 BASIS:	10CFR55.41 (7)
COMMENTS:	Q 38

An operator walking down the control room boards notices the green "NOT RUNNING" indicator light above the RHR A pump switch is not lit. After changing the light bulb, it still doesn't come on. After further troubleshooting, the operator decides to check the power supply that provides control power to the RHR A pump circuit breaker.

To do this the operator would go to 125 Volt DC Bus:

A. S1-1.

B. S1-2.

C. S1-4.

D. S1-7.

ANSWER:	A
QUESTION TYPE:	RO
KA# & KA VALUE:	219000/K2.02 & 3.1 – RHR/LPCI: Torus/Pool cooling mode.
REFERENCE:	SD000182, Revision 12, Page 89.
SOURCE:	New Question – RO Tier 2, Group 2
LEARNING OBJECTIVE:	5065 – Identify the source of control power for breakers connected to: b. SM-7 and SM-8.
RATING:	1
ATTACHMENTS:	None
JUSTIFICATION:	The circuit breakers on bus SM-7 are provided control power from S1-1. Therefore, answer A is correct.
10CFR55 BASIS:	10CFR55.41 (7)
COMMENTS:	Q 39

A control room operator places the control switch for breaker N1-1 in the CLOSE position.

With SM-1 energized from the station startup transformer and the appropriate synchroscope control switch in manual, the operator should observe breaker N1-1:

A. close and breaker S-1 immediately trip.

B. remain open because bus SM-1 is already energized.

C. close and SM-1 will be energized from both the normal and startup transformers.

D. close and breaker S-1 will trip after a three second time delay.

ANSWER:	A
QUESTION TYPE:	RO
KA# & KA VALUE:	262001/A1.05 & 3.2 – AC Electrical Distribution/Breaker Lineups.
REFERENCE:	LO000182, Revision 12, Page 51.
SOURCE:	Bank Question LO00370 – RO Tier 2, Group 1
LEARNING OBJECTIVE:	
RATING:	2
ATTACHMENTS:	None
JUSTIFICATION:	With the control switch in CLOSE, breaker N1-1 will close (answer B is incorrect). When breaker N1-1 in the closed position, breaker S-1 will immediately trip. Answer A is correct and answer C and D are incorrect.
10CFR55 BASIS:	10CFR55.41 (5)
COMMENTS:	Q 40

A control room operator responding to an RHR A low pressure alarm discovers the RHR A keep-fill pump has tripped.

Should the RHR A pump be required to operate in the LPCI mode, the reactor operator starting the pump should throttle down on the:

A. pump discharge valve (RHR-V-110A) prior to starting the pump to minimize the potential for water hammer damage.

B. LPCI injection valve (RHR-V-42A) prior to starting the pump to control the initial flow rate to the reactor vessel.

C. pump suction valve (RHR-V-6A) prior to starting the pump to minimize the potential for pump cavitation.

D. min flow valve (RHR-V-64) prior to starting the pump to maximize the flow rate to the reactor vessel.

ANSWER:	A
QUESTION TYPE:	RO
KA# & KA VALUE:	203000/A2.17 & 3.3 – RHR/LPCI: Injection Mode/Keep-fill system failure.
REFERENCE:	Procedure ABN-RHR-DEPRESS, Revision 0, Page 2.
SOURCE:	New Question – RO Tier 2, Group 1
LEARNING OBJECTIVE:	CAF
RATING:	2
ATTACHMENTS:	None
JUSTIFICATION:	With the keep fill system inoperative, the RHR pump is disabled to prevent water hammer damage. If the pump is needed for an emergency, it can be started by throttling the discharge valve in the closed direction, starting the pump, and slowly reopening the discharge valve. Therefore, answer A is correct.
10CFR55 BASIS:	10CFR55.41 (5)
COMMENTS:	Q 41

The Drywell Spray Initiation Limit (DSIL) is a function of drywell temperature and pressure.

If the operator were to initiate drywell sprays prior to exceeding the DSIL, a very rapid initial reduction of pressure could occur due to:

A. convective cooling.

B. conductive cooling.

C. evaporative cooling.

D. radiative cooling.

ANSWER:	C
QUESTION TYPE:	RO
KA# & KA VALUE:	295012/AK1.01 & 3.3 – High Drywell Temperature/Pressure/Temperature relationship.
REFERENCE:	Procedure 5.0.10, Revision 7, Page 71.
SOURCE:	New Question – RO Tier 1, Group 2
LEARNING OBJECTIVE:	CAF
RATING:	2
ATTACHMENTS:	None
JUSTIFICATION:	The limit is based on not exceeding the differential pressure between the wetwell and drywell. This could occur due to the evaporative cooling effect causing a reduction in volume faster than could be made up through the vacuum breakers. Answers B and D are not a concern and answer A does not occur initially. Therefore the answer is C.
10CFR55 BASIS:	10CFR55.41 (9)
COMMENTS:	Q 42

The plant is operating at 70% power with the reactor recirc control in AUTO when an electrical fault results in a trip of one reactor recirc pump.

With no operator action:

A. the reactor will scram and the remaining pump will runback to 15 Hz.

B. reactor power will decrease and the remaining pump will runback to 15 Hz.

C. reactor power will decrease and the remaining pump will increase speed.

D. reactor power will decrease and the remaining pump will maintain a constant speed.

ANSWER:	D
QUESTION TYPE:	RO
KA# & KA VALUE:	295001/AK3.02 & 3.7 - Reactor Power Response on a Partial or Complete Loss of Forced Core Flow Circulation
REFERENCE:	SD000184, Revision 14, page 12
SOURCE:	New Question – RO Tier 1, Group 1
LEARNING OBJECTIVE:	LO 9687 - State the conditions that will cause an individual ASD controller to automatically shift to manual.
RATING:	2
ATTACHMENTS:	None
JUSTIFICATION:	When the reactor recirc pump trips, power will decrease due to reduced core flow. The remaining pump will shift to manual control and speed will remain constant unless changed by the operator. Therefore the correct answer is D.
10CFR55 BASIS:	10CFR55.41 (5)
COMMENTS:	Q 43

The reactor is in coast down at 93 percent power with the refueling outage scheduled to begin in ten days. All controls are in their normal configuration and reactor recirculation flow control is in AUTO.

If the main generator were to trip on a loss of excitation, the reactor would scram and both reactor recirculation pumps would:

A. shift to manual flow control and maintain a constant speed.

B. runback to 51 Hz.

C. runback to 15 Hz.

D. trip.

ANSWER:	D ✓
QUESTION TYPE:	RO
KA# & KA VALUE:	295005AA1.01 & 3.1 - The Effect of a Main Turbine Generator Trip on the Reactor Recirc System.
REFERENCE:	SD000178, Revision 13, Page 23.
SOURCE:	New Question – RO Tier 1, Group 1
LEARNING OBJECTIVE:	5023 - Predict the impact on the RRC system [for] each of the following conditions or events: f. EOC-RPT logic.
RATING:	3
ATTACHMENTS:	None
JUSTIFICATION:	The fault on the generator will cause a turbine trip. With turbine first stage pressure above 30 percent power (142 psig) the turbine trip will actuate the EOC-RPT logic and both recirc pumps will trip. Therefore the correct answer is D.
10CFR55 BASIS:	10CFR55.41 (7)
COMMENTS:	Q 44

Following a reactor scram, a reactor operator checks control rod and scram accumulator status using the full core display.

If the scram actuation went as designed, all the control rod green (full in) lights will be lit, all the blue "SCRAM" lights should be:

A. lit, and all the "ACCUM" (Accumulator Trouble) lights should be lit.

B. lit, and all the "ACCUM" (Accumulator Trouble) lights should be out.

C. out, and all the "ACCUM" (Accumulator Trouble) lights should be lit.

D. out, and all the "ACCUM" (Accumulator Trouble) lights should be out.

ANSWER:	A
QUESTION TYPE:	RO
KA# & KA VALUE:	295006AA2.02 & 4.3 - Reactor Scram and Control Rod Position
REFERENCE:	LO000148, Revision 10, Page 18.
SOURCE:	New Question – RO Tier 1, Group 1
LEARNING OBJECTIVE:	7752 - Describe the effect(s) on these full core display items when a trip signal is present in both RPS trip systems: a. Rod position, b. Accumulator fault, c. Scram Valves
RATING:	1
ATTACHMENTS:	None
JUSTIFICATION:	Following a scram, all the scram valves should be open which turns on all the blue scram valve lights. Because of the scram, all the accumulators will have a fault due to low pressure which will turn on the accumulator trouble lights. Therefore, the correct answer is A.
10CFR55 BASIS:	10CFR55.41 (10)
COMMENTS:	Q 45

With the plant operating at 100 percent, one of the two running reactor closed cooling water (RCCW) system pumps trip due to an electrical fault and the standby pump fails to start. The reactor operator is successful in manually starting the standby pump about a minute after the initial pump trip.

With no further operator action;

A. reactor recirc pump motor temperatures will increase.

B. reactor water cleanup temperatures will increase.

C. drywell pressure will increase.

D. control rod mechanism temperatures will increase.

ANSWER:	B
QUESTION TYPE:	RO
KA# & KA VALUE:	295018AA2.03 & 3.2 - The cause of a partial or complete loss of CCW.
REFERENCE:	LO000196, Revision 9, Page 14.
SOURCE:	New Question – RO Tier 1, Group 1
LEARNING OBJECTIVE:	7668 - Predict the plant response to a: a. Partial and a complete loss of RCC.
RATING:	2
ATTACHMENTS:	None
JUSTIFICATION:	On a degraded flow condition (less than 2 pumps operating) in the RCCW system for greater than 10 seconds, isolation valve RCC-V-6 closes. The closure of this valve results in a loss of cooling water to the RWCU non-regenerative heat exchanger. Eventually the RWCU system will isolate on high temperature at 140 degrees. There will not be an effect on the RRC or drywell since this is not on the isolated header and there is no cause-and-effect relationship with the CRDM cooling. Therefore, answer B is correct.
10CFR55 BASIS:	10CFR55.41 (4)
COMMENTS:	Q 46

With the plant at 100 percent power and assuming no operator action, a loss of plant control and service air (CAS) to the control rod hydraulic system will result in a loss of:

A. purge flow to the reactor water cleanup pumps.

B. seal flow to the reactor recirc pump seals.

C. cooling water to the control rod drive mechanisms.

D. charging water to the scram accumulators.

ANSWER:	C
QUESTION TYPE:	RO
KA# & KA VALUE:	295019AK2.01 & 3.8 - Interrelations between a loss of instrument air and the CRDH system.
REFERENCE:	SD000142, Revision 12, Figure 1 (Simplified Diagram: Control Rod Hydraulic System).
SOURCE:	New Question – RO Tier 1, Group 1
LEARNING OBJECTIVE:	5192 - Describe the physical and/or cause-and-effect relationship between the CRDH system and the following: b. Control Air System.
RATING:	2
ATTACHMENTS:	None
JUSTIFICATION:	On a loss of control air to the control rod hydraulic system the air operated flow control valve will fail closed. With this valve closed cooling water to the control rod drive mechanisms will be lost. Charging water to the accumulators, recirc pump seal flow, and purge flow to the RWCU pumps tap off upstream of the flow control valves.
10CFR55 BASIS:	10CFR55.41 (7)
COMMENTS:	Q 47

The plant has been shutdown for 48 hours and is in Mode 4 for a refueling outage. Plant status is:

- the reactor head is still tensioned
- all control rods are fully inserted
- reactor temperature is 160 degrees
- reactor water level is +50 inches
- Residual Heat Removal (RHR) train B is in service providing core cooling
- RHR pump A is out of service due to failed motor bearings
- off-site power is available
- both reactor recirc pumps are shutdown

An inadvertent containment isolation results in a loss of shutdown cooling. If shutdown cooling is not restored:

A. decay heat will cause the reactor to shift to natural circulation.

B. decay heat will cause thermal stratification in the core.

C. primary containment integrity must be established within one hour.

D. secondary containment integrity must be established within one hour.

ANSWER:	B
QUESTION TYPE:	RO
KA# & KA VALUE:	295021AK1.01 & 3.6 - Loss of shutdown cooling/decay heat
REFERENCE:	Procedure ABN-RHR-SDC-LOSS, Revision 2.
SOURCE:	New Question – RO Tier 1, Group 1
LEARNING OBJECTIVE:	Unknown
RATING:	2
ATTACHMENTS:	None
JUSTIFICATION:	On a loss of shutdown cooling, decay heat will cause thermal stratification in the reactor core to begin. With the reactor recirc pumps shutdown there is no forced flow through the core. Reactor water level is not high enough to facilitate natural circulation. Primary and secondary containment integrity are not required until the reactor reaches 200 degrees. Therefore, answer B is correct.
10CFR55 BASIS:	10CFR55.41 (2)
COMMENTS:	Q 48

The plant is shutdown with all the fuel off-loaded from the reactor vessel to the spent fuel pool. A refueling accident in the spent fuel pool results in high airborne activity levels.

Workers in the area would be warned of the high airborne activity levels by:

A. klaxon horns.

B. flashing red strobe lights.

C. flashing white strobe lights.

D. sirens.

ANSWER:	A
QUESTION TYPE:	RO
KA# & KA VALUE:	295023AA1.04 & 3.4 - Refueling Accident/Radiation Monitoring Equipment.
REFERENCE:	LO000141, Area Radiation Monitoring System, Revision 9, Page 8.
SOURCE:	New Question – RO Tier 1, Group 1
LEARNING OBJECTIVE:	5114 - Explain how plant personnel are alerted to high radiation levels both locally and in the Control Room.
RATING:	1
ATTACHMENTS:	None
JUSTIFICATION:	High area radiation levels in the fuel pool area activate klaxon horns in the area to warn personnel. Therefore answer A is correct.
10CFR55 BASIS:	10CFR55.41 (7)
COMMENTS:	Q 49

Emergency Operating Procedure 5.2.1, Primary Containment Control, states that if the wetwell level and reactor pressure vessel pressure cannot be maintained below the Safety Relief Valve Tailpipe Level Limit (SRVTPLL) an emergency depressurization is required.

The basis of the SRVTPLL limit is to:

A. ensure there is a sufficient volume of water to condense the steam should an emergency depressurization be required.

B. ensure the SRV downcomers remain submerged.

C. maintain the operability of the wetwell to drywell vacuum breakers.

D. ensure SRV tailpipe stresses do not exceed those allowed by code when an SRV is opened.

ANSWER:	D
QUESTION TYPE:	RO
KA# & KA VALUE:	295024G2.1.32 & 3.4 - High Drywell Pressure/Ability to apply system limits and precautions.
REFERENCE:	Procedure 5.0.10, Emergency Operating Procedures, Revision 7, Page 264.
SOURCE:	New Question – RO Tier 1, Group 1
LEARNING OBJECTIVE:	CAF
RATING:	2
ATTACHMENTS:	None
JUSTIFICATION:	The SRVTPLL is to ensure the combination of RPV pressure and water level backpressure do not exceed the allowable code stress when an SRV is opened. Exceeding this value could result in a failure of a tailpipe and a loss of containment. Answers A and B are for low level and answer D is for a much higher level than the SRVTPLL. Therefore the answer is D.
10CFR55 BASIS:	10CFR55.41 (10)
COMMENTS:	Q 50

An operator error on the reactor recirc system results in an increase in reactor recirc pump speed, reactor power, and reactor pressure.

Assuming reactor power went from 90 to 98 percent and the DEH system is in Mode 4 (reactor follow mode), the DEH system response will be to:

A. open bypass valves until reactor pressure is reduced to the pressure setpoint.

B. further open the turbine governor valves until reactor pressure is reduced to the pressure setpoint.

C. further open the turbine throttle valves until reactor pressure is reduced to the pressure setpoint.

D. further open the turbine governor valves until actual generator megawatt output matches the new demanded generator megawatt output.

ANSWER:	B
QUESTION TYPE:	RO
KA# & KA VALUE:	295025EK3.08 & 3.5 - High Reactor Pressure/Reactor/Turbine pressure regulating system.
REFERENCE:	SD000146, Revision 8, Figure 4D - Simplified DEH Control System - Turbine Follow Reactor Mode (mode 4)
SOURCE:	New Question – RO Tier 1, Group 1
LEARNING OBJECTIVE:	9955 - Describe the DEH response to changes in reactor pressure in each of the four DEH modes including the relationship between reactor pressure and the DEH pressure setpoint.
RATING:	3
ATTACHMENTS:	None
JUSTIFICATION:	With the DEH system in reactor follow mode the increase in reactor pressure will be sensed causing a mismatch between actual pressure and pressure setpoint. This will cause the governor valves to open. The throttle valves are full open unless the turbine trips and the bypass valves remain closed unless the flow limit limiter is exceeded. Therefore answer B is correct.
10CFR55 BASIS:	10CFR55.41 (7)
COMMENTS:	Q 51

The system designed to maintain reactor vessel inventory during a loss of coolant accident involving a pipe break that is too small to cause a depressurization of the reactor pressure vessel is:

A. Reactor Core Isolation Cooling (RCIC)

B. Residual Heat Removal (RHR)

C. High Pressure Core Spray (HPCS)

D. Automatic Depressurization System (ADS)

ANSWER:	C
QUESTION TYPE:	RO
KA# & KA VALUE:	295031EK3.03 & 4.1 - Reactor Low Water Level/Spray Cooling
REFERENCE:	SD000174, Revision 10, Page 3.
SOURCE:	New Question – RO Tier 1, Group 1
LEARNING OBJECTIVE:	5420 - State the purpose of the High Pressure Core Spray System.
RATING:	1
ATTACHMENTS:	None
JUSTIFICATION:	Answer B is incorrect because RHR is a low pressure system and cannot inject into the reactor vessel when it is at rated pressure. Answer D is incorrect because ADS provides no inventory make up to the reactor function. Answer A is incorrect because RCIC is designed to make up to the reactor when it is shutdown. RCIC will not auto start on high drywell pressure. Answer C is correct because HPCS provides makeup to the reactor at a high pressure and auto starts on a high drywell pressure signal.
10CFR55 BASIS:	10CFR55.41 (5)
COMMENTS:	Q 52

The plant is operating at 100 % power near the end of the cycle with all the control rods withdrawn. Following the receipt of a valid scram signal, the reactor operator notes the APRMs are indicating reactor power is approximately 5-7 percent. The operator also notes:

- all the white RPS scram lights are deenergized
- all the blue scram lights are energized
- 23 control rods are not fully inserted

The 23 control rods did not fully insert because:

A. one of the RPS scram (K14) relays failed to deenergize.

B. a hydraulic lock exists on the withdrawn control rods.

C. the scram valves on the withdrawn control rods failed to open.

D. one group of scram valve pilot solenoids failed to deenergize.

ANSWER:	B
QUESTION TYPE:	RO
KA# & KA VALUE:	295037EA2.05 & 4.2 - SCRAM Condition Present and Power Above APRM Downscale or Unknown.
REFERENCE:	Procedure 5.1.2, RPV Control - ATWS, Revision 16, Step Q-20.
SOURCE:	New Question – RO Tier 1, Group 1
LEARNING OBJECTIVE:	Unknown
RATING:	3
ATTACHMENTS:	None
JUSTIFICATION:	All the white RPS scram lights being deenergized indicates all the K14 relays and scram valve pilot solenoids deenergized. All the blue scram lights being energized indicates all scram valves are open. According to EOP 5.2.1, with these indications present the control rods are hydraulically locked. Therefore the correct answer is B.
10CFR55 BASIS:	10CFR55.41 (6)
COMMENTS:	Q 53

Step R-1 of EOP 5.4.1, Radioactivity Release Control, in part states, "If turbine building HVAC is shutdown then restart turbine building HVAC."

This action is taken in an effort to:

A. reduce the airborne concentration of radioactive particles using the filters in the turbine building ventilation system.

B. establish and maintain a negative pressure in the turbine building relative to the general environment.

C. ensure any radioactivity in the turbine building atmosphere is discharged through a monitored release point.

D. provide mixing of the turbine building atmosphere to reduce general area dose rates.

ANSWER:	C
QUESTION TYPE:	RO
KA# & KA VALUE:	295038EK2.03 & 3.2 - High Off-Site Release Rate/Plant Ventilation Systems.
REFERENCE:	Procedure 5.0.10, Emergency Operating Procedures, Revision 7, Page 301.
SOURCE:	New Question – RO Tier 1, Group 1
LEARNING OBJECTIVE:	Unknown
RATING:	2
ATTACHMENTS:	None
JUSTIFICATION:	There are two reasons to restart the turbine ventilation system. First, it reduces the turbine building dose rates for personnel that need to enter the area for emergency purposes. Secondly, it vents the turbine building through a monitored release point. Therefore, the correct answer is C.
10CFR55 BASIS:	10CFR55.41 (7)
COMMENTS:	Q 54

Using the attached Generator Capability Curve, determine which set of conditions are ACCEPTABLE for Main Generator operation.

A. Generator megawatts -- 750 MW
Generator reactive load -- 200 MVARS in
Hydrogen pressure -- 45 psig

B. Generator megawatts -- 750 MW
Generator reactive load -- 300 MVARS out
Hydrogen pressure -- 45 psig

C. Generator megawatts -- 1000 MW
Generator reactive load -- 200 MVARS in
Hydrogen pressure -- 45 psig

D. Generator megawatts -- 1050 MW
Generator reactive load -- 200 MVARS out
Hydrogen pressure -- 50 psig

ANSWER:	A
QUESTION TYPE:	RO
KA# & KA VALUE:	2.1.25 & 2.8 - Ability to obtain and interpret station reference materials such as graphs/monographs/and tables which contain performance data.
REFERENCE:	SOP-MT-START, Revision 0, Generator Capability Curve
SOURCE:	New Question – RO Generic Knowledge and Abilities
LEARNING OBJECTIVE:	CAF
RATING:	2
ATTACHMENTS:	~~None~~ Generator Capability Curve
JUSTIFICATION:	The referenced curve prohibits more than 100 MVAR out so answers B and D are wrong. Answer C is outside the limit for 45 psig. Answer A is inside the capability curve so it is the only correct answer.
10CFR55 BASIS:	10CFR55.41 (5/10)
COMMENTS:	Q 55

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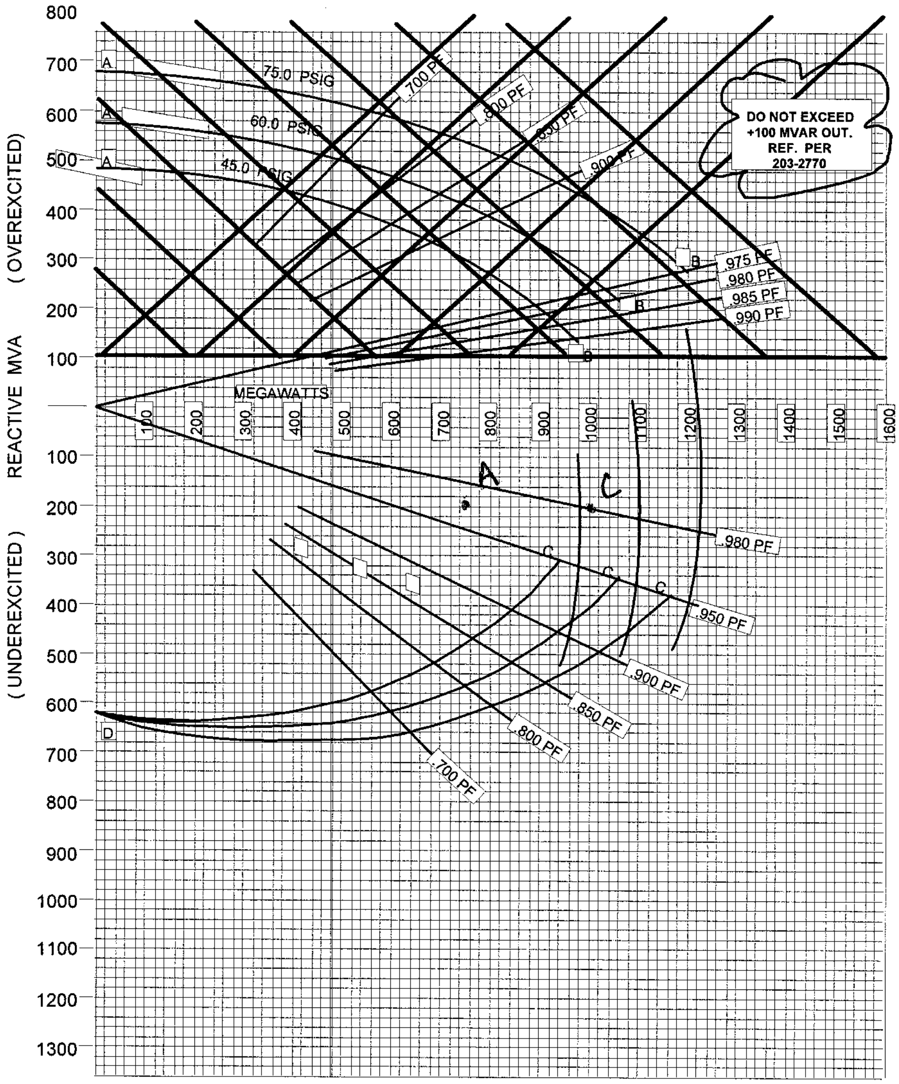
GENERATOR CAPABILITY CURVE

CURVE A-B LIMITED BY FIELD WINDING TEMPERATURE
CURVE B-C LIMITED BY STATOR WINDING TEMPERATURE
CURVE C-D LIMITED BY STATOR CORE END HEATING



2.5.4.53
7-30-03

HYDROGEN INNER-COOLED TURBINE GENERATOR
1230.000 MVA .975 PF 25.0 KV 28406 AMPERES
3 PHASE 60 HERTZ 1800 RPM .58 SCR 75 PSIG

NUMBER	REVISION	PAGE
SOP-MT-START	0	1 of 18

GENERATOR CAPABILITY CURVE TABULAR VALUES

MVARS (+) OUT/ OVER-EXCITED (-) IN/ UNDER-EXCITED	75 PSIG Min H2 PRESS (1230 MVA Limit) MWe Limit =	74 PSIG Min H2 PRESS (1221 MVA Limit) MWe Limit =	73 PSIG Min H2 PRESS (1213 MVA Limit) MWe Limit =	72 PSIG Min H2 PRESS (1205 MVA Limit) MWe Limit =	71 PSIG Min H2 PRESS (1196 MVA Limit) MWe Limit =	70 PSIG Min H2 PRESS (1189 MVA Limit) MWe Limit =	68 PSIG Min H2 PRESS (1171 MVA Limit) MWe Limit =	66 PSIG Min H2 PRESS (1155 MVA Limit) MWe Limit =	64 PSIG Min H2 PRESS (1138 MVA Limit) MWe Limit =
Do Not Exceed +100 MVARs Due to Main Generator Rotor Shorted Turns. Reference PER 203-2770									
+61 to +100	1225	1216	1208	1200	1191	1183	1166	1150	1133
+31 to +60	1228	1219	1211	1203	1194	1187	1169	1153	1136
-30 to +30	1229	1220	1212	1204	1195	1188	1170	1154	1137
-60 to -31	1228	1219	1211	1203	1194	1187	1169	1153	1136
-61 to -120	1224	1215	1207	1199	1189	1181	1164	1137	1131
-121 to -200	1213	1204	1196	1188	1179	1171	1153	1137	1120
LT -200			USE	GEN	CURVE	PREV	PAGE		

Use Recorder E-RECT-W/VAR/G1 on board C for MVAR and for MWe.

Due to rounding and use of broad MVAR ranges in the table, the above MWe Limit values should be conservative when compared to limits computed using actual values of MVAR. This table is the normal method of verifying compliance with the generator capability curve. The plant computers are to be used as a secondary indication of such compliance.

NUMBER	REVISION	PAGE
SOP-MT-START	0	2 of 18

The control room crew was provided with an estimated critical position (ECP) by the SNE. During the startup it has become clear the reactor will not go critical within the ECP delta K/K band provided by the SNE.

At this point the control room crew should:

A. reinsert all the control rods until the deviation is understood.

B. maintain the reactor subcritical until the deviation is understood.

C. obtain CRS approval and continue the approach to criticality.

D. obtain Shift Manager approval and continue the approach to criticality.

ANSWER:	B
QUESTION TYPE:	RO
KA# & KA VALUE:	2.2.2 & 4.0 - Ability to manipulate the console controls as required to operate the facility between shutdown and designated power levels.
REFERENCE:	Procedure 1.3.59, Reactivity Management Program, Revision 7, Step 2.6.3.
SOURCE:	New Question – Generic Knowledge and Abilities
LEARNING OBJECTIVE:	Unknown
RATING:	1
ATTACHMENTS:	None
JUSTIFICATION:	The referenced procedure states the operator should maintain the reactor subcritical until the deviation is understood. Therefore the correct answer is B.
10CFR55 BASIS:	10CFR55.41 (2)
COMMENTS:	Q 56

The station Technical Specifications state that exceeding a Technical Specification Safety Limit requires:

A. the Nuclear Regulatory Commission be notified within one hour of the violation.

B. all insertable control rods are fully inserted within two hours of the violation.

C. compliance with all Safety Limits be restored within 15 minutes of the violation.

D. an Unusual Event be declared within 15 minutes of the violation.

ANSWER:	B
QUESTION TYPE:	RO
KA# & KA VALUE:	2.2.22 & 3.4 - Knowledge of limiting conditions for operations and safety limits.
REFERENCE:	Technical Specifications, Section 2.2, Safety Limit Violations
SOURCE:	New Question – Generic Knowledge and Abilities
LEARNING OBJECTIVE:	Unknown
RATING:	1
ATTACHMENTS:	None
JUSTIFICATION:	The referenced tech spec requires two actions. First, restore compliance within 2 hours. Second, insert all control rods within two hours. The NRC must be notified within 4 hours of a plant shutdown required by tech specs. Therefore, the correct answer is B.
10CFR55 BASIS:	10CFR55.41 (5)
COMMENTS:	Q 57

Following a reactor scram the reactor operator notes:

- reactor power is 7 percent
- 6 control rods are not fully inserted
- there are rod insert and withdraw rod blocks in effect for all the withdrawn control rods

The insertion block for these rods must be bypassed:

A. in the Rod Worth Minimizer (RWM) to attempt manual insertion.

B. in the Rod Position Indication System (RPIS) in order to attempt manual insertion.

C. in the Rod Sequence Control System (RSCS) to attempt manual insertion.

D. using the bypass switch on the individual Hydraulic Control Units (HCUs) in order to scram the individual control rods.

ANSWER:	C
QUESTION TYPE:	RO
KA# & KA VALUE:	295015AK3.01 & 3.4 - Incomplete Scram/Bypassing Rod Insertion Blocks
REFERENCE:	LO000160, Rod Sequence Control System, Revision 10, pages 15/16.
SOURCE:	New Question – RO Tier 1, Group 2
LEARNING OBJECTIVE:	CAF
RATING:	2
ATTACHMENTS:	None
JUSTIFICATION:	Rod insert/withdraw rod blocks are a function of the RSCS and are enforced below 20 percent reactor power as sensed by turbine first stage pressure. Bypassing the first stage pressure signal in the RSCS will eliminate all rod blocks because the RSCS will think power is above 20 percent. None of the other answers will bypass the rod blocks. Therefore the correct answer is C.
10CFR55 BASIS:	10CFR55.41 (5)
COMMENTS:	Q 58

The plant is at Rated Thermal Power (RTP) and has experienced a loss of AC power to the 250 Volt DC bus S2-1 (Division 1) battery charger.

If an AC source is not recovered for S2-1, battery voltage will decay and eventually:

A. the reactor feed pumps will trip.

B. the main turbine will trip.

C. RCIC will not start on demand.

D. the A RHR pump will not start on demand.

ANSWER:	C
QUESTION TYPE:	RO
KA# & KA VALUE:	295003AK2.01 & 3.2 - Partial or Complete Loss of AC/Station Batteries.
REFERENCE:	SD000188, DC Power, Revision 7, pages 23/24.
SOURCE:	New Question – RO Tier 1, Group 1
LEARNING OBJECTIVE:	LO-7657 Predict the effects a loss of 250 VDC S2-1 will have on RCIC/main turbine/RFPTs.
RATING:	2
ATTACHMENTS:	None
JUSTIFICATION:	If S2-1 voltage were to degrade, the main turbine and RFPTs will lose their DC powered lube oil pumps but will continue operating. RCIC will not start on demand and the A RHR pump will start on demand. Therefore, the correct answer is C.
10CFR55 BASIS:	10CFR55.41 (7)
COMMENTS:	Q 59

The plant is operating at Rated Thermal Power (RTP) when main condenser vacuum begins to lower (trending towards no vacuum).

If this trend continues and no operator action is taken, which of the following will occur first:

A. The main turbine will trip.

B. The turbine driven reactor feed pumps will trip.

C. The main steam isolation valves will close.

D. The main turbine bypass valves will close and/or will not open.

ANSWER:	A
QUESTION TYPE:	RO
KA# & KA VALUE:	295002AA1.05 & 3.2 - Loss of Main Condenser Vacuum/Main Turbine
REFERENCE:	LO000129, Main Turbine System, Revision 9, Page 33.
SOURCE:	New Question – RO Tier 1, Group 2
LEARNING OBJECTIVE:	List all parameters and setpoints that will cause a turbine trip.
RATING:	2
ATTACHMENTS:	None
JUSTIFICATION:	The RFPTs trip at 0" Hg, the MSIVs isolate at 7" Hg, the bypass valves are interlocked closed at 7" Hg, and the main turbine trips at 20" Hg. Therefore the correct answer is A.
10CFR55 BASIS:	10CFR55.41 (7)
COMMENTS:	Q 60

The reactor is operating at Rated Thermal Power (RTP) when the running Control Rod Drive Hydraulic (CRDH) pump trips on over current.

Prior to starting the standby pump, the reactor operator is required to close the CRDH flow control valve (FCV 2A/2B) in order to:

A. limit the standby pump starting current.

B. prevent rod drifts.

C. establish the pump discharge pressure above the CRDH header pressure.

D. prevent damage to the flow control valve.

ANSWER:	B
QUESTION TYPE:	RO
KA# & KA VALUE:	295022AK2.02 & 3.1 - Loss of CRD Pumps/CRD Mechanism
REFERENCE:	Procedure ABN-CRD, Complete Loss of CRD Drive Flow, Revision 2, Step 4.3. Training document SD000142, Control Rod Drive Hydraulic System, Revision 12, Page 31.
SOURCE:	New Question – RO Tier 1, Group 2
LEARNING OBJECTIVE:	CAF
RATING:	2
ATTACHMENTS:	None
JUSTIFICATION:	When the running pump trips, the CRDH flow control valve senses no flow and fully opens. If the standby pump is started with the valve fully open the resultant pressure surge is communicated to the CRDMs through the cooling water header and may cause rod drifts. Therefore the correct answer is B.
10CFR55 BASIS:	10CFR55.41 (7)
COMMENTS:	Q 61

An electrical fault on bus DP-S1-2 has resulted in the loss of 125 VDC power.

One effect with regard to the loss of DP-S1-2 is that any circuit breaker using DP-S1-2 supplied control power:

A. will trip open if the breaker is closed.

B. can not be operated locally.

C. can only operated from the control room or remote shutdown panel.

D. will not have beaker fault protection.

ANSWER:	D
QUESTION TYPE:	RO
KA# & KA VALUE:	295004AK1.05 & 3.3 - Partial or complete loss of DC Power/Loss of Breaker Protection
REFERENCE:	ABN-ELEC-125VDC, Plant BOP, Div 1, 2, &3 125 VDC Distribution System Failures, Revision 1, Section 4.3.
SOURCE:	New Question – RO Tier 1, Group 1
LEARNING OBJECTIVE:	CAF
RATING:	2
ATTACHMENTS:	None
JUSTIFICATION:	Bus DP-S1-2 provides, among other things, control power to a variety of Div 2 safety related breakers. On the loss of control power the breakers can not be remotely operated and they lose automatic fault protection. The breakers can be operated locally. Therefore the correct answer is D.
10CFR55 BASIS:	10CFR55.41 (8)
COMMENTS:	Q 62

Following a LOCA, a reactor operator is directed to place the A loop of RHR in the suppression pool cooling mode to reduce suppression pool temperature. Plant conditions are:

- all control rods are fully inserted
- drywell pressure is 3.8 psig and stable
- reactor pressure is 12 psig and slowly lowering
- RHR loops A and B are both running in the LPCI mode
- RCIC and HPCS are shutdown
- reactor vessel water level is 60 inches and increasing

To place RHR A in suppression pool cooling, the A LPCI injection valve (RHR-V-42A) must be closed.

Over riding the LOCA interlock on this valve will require:

A. resetting the Group 5 isolation signal.

B. placing the control room switch for the LPCI injection valve (RHR-V-42A) in the CLOSE position.

C. resetting the Division 1 LOCA signal.

D. resetting the Group 6 isolation signal.

ANSWER:	B
QUESTION TYPE:	RO
KA# & KA VALUE:	295026EA1.01 &4.1- Suppression Pool High Water Temperature/Suppression Pool Cooling
REFERENCE:	SD000198, RHR System, Revision 11, Page 17.
SOURCE:	New Question – RO Tier 1, Group 1
LEARNING OBJECTIVE:	7729 - State the RHR system components that have a manual over ride circuit and the conditions required to activate the associated over ride lights
RATING:	2
ATTACHMENTS:	None
JUSTIFICATION:	The LPCI injection valve LOCA signal can be over ridden by placing the control switch in CLOSE. This will close the valve and energize the amber LOCA over ride light.
10CFR55 BASIS:	10CFR55.41 (7)
COMMENTS:	Q 63

A fire is burning in the Power Block that "threatens safe plant operation."

Which of the following is required by procedure?

A. Insert control rods per the fast shutdown sequence until power is at least below the 75% rod line.

B. Reduce reactor recirculation flow and scram the reactor.

C. Maintain reactor power at, or below, 75% power.

D. A reduction of RRC pump speed to 30 Hz per PPM 2.2.0.

ANSWER:	B
QUESTION TYPE:	RO
KA# & KA VALUE:	600000AA2.13 & 3.2 - Plant Fire on Site/Need for Emergency Plant Shutdown
REFERENCE:	Procedure ABN-Fire, FIRE, Revision 6, Step 4.3.
SOURCE:	New Question – RO Tier 1, Group 1
LEARNING OBJECTIVE:	CAF
RATING:	1
ATTACHMENTS:	None
JUSTIFICATION:	The referenced procedure states, "<u>IF</u> the fire threatens safe plant operation, <u>THEN</u> REDUCE RRC flow <u>AND</u> SCRAM the reactor." Therefore the correct answer is B.
10CFR55 BASIS:	10CFR55.41 (10)
COMMENTS:	Q 64

According the requirements established in Procedure 1.3.1, Operating Policies, Programs, and Practices, with the reactor operating at 100 percent power, the minimum number of licensed reactor operators in the control room is:

A. 1

B. 2

C. 3

D. 4

ANSWER:	C
QUESTION TYPE:	RO
KA# & KA VALUE:	2.1.1 & 3.7 - Knowledge of conduct of operations requirements.
REFERENCE:	Procedure 1.3.1, Operating Policies, Programs, and Practices, Revision 62, Step 4.15.
SOURCE:	New Question – RO Generic Knowledge and Abilities
LEARNING OBJECTIVE:	CAF
RATING:	1
ATTACHMENTS:	None
JUSTIFICATION:	The referenced procedure states 3 reactor operators must be present in the control room in mode 1.
10CFR55 BASIS:	10CFR55.41 (10)
COMMENTS:	Q 65

A reactor operator is performing an activity using an approved system operating procedure.

Deviation from a procedural step containing the word SHALL requires:

A. changing the procedure to permit the desired action.

B. approval from the Control Room Supervisor prior to deviating from the procedure.

C. approval from the Shift Manager prior to deviating from the procedure.

D. approval from two licensed SROs.

ANSWER:	A
QUESTION TYPE:	RO
KA# & KA VALUE:	2.1.20 & 4.3 - Ability to execute procedure steps.
REFERENCE:	Procedure SWP-PRO-01, Description and Use of Procedures and Instructions, Revision 4, Step 3.6.2.b.
SOURCE:	New Question – RO Generic Knowledge and Abilities
LEARNING OBJECTIVE:	CAF
RATING:	1
ATTACHMENTS:	None
JUSTIFICATION:	The referenced procedure states a procedure change is required for deviation from a SHALL statement. Therefore the answer is A
10CFR55 BASIS:	10CFR55.41 (10)
COMMENTS:	Q 66

Radiation element RCC-RE-7 is located on the Reactor Closed Cooling Water (RCCW) pump suction piping.

A high radiation signal from this sensor will result in an automatic:

A. trip of the RCCW pumps.

B. closure of the RCC containment isolation valves.

C. closure of the RCCW surge tank vent valve.

D. closure of the RCCW heat exchanger isolation valves.

ANSWER:	C
QUESTION TYPE:	RO
KA# & KA VALUE:	400000A3.01 & 3.0 - Component Cooling Water/Setpoints on instrument signal levels for normal operations, warnings, and trips that are applicable to the CCWS.
REFERENCE:	LO000196, Revision 9, Page 7.
SOURCE:	New Question – RO Tier 2, Group 1
LEARNING OBJECTIVE:	7668 - Predict the plant response to a: b) High radiation in RCC water.
RATING:	1
ATTACHMENTS:	None
JUSTIFICATION:	On receipt of a Hi or Hi Hi Radiation trip, as measured in the RCC system pump suction piping by radiation element RCC-RE-7, the surge tank vent valve automatically closes. Therefore the correct answer is C.
10CFR55 BASIS:	10CFR55.41 (5)
COMMENTS:	Q 67

The plant has experienced a major transient including a scram, due to a loss of several electrical buses. As a result, the CRS has implemented actions per the EOPs. CRO2 then observes that a lockout has occurred on bus SM-8 and without prompting, takes the immediate actions for the loss of SM-8.

Taking this action was:

A. correct because the CRO diagnosed the event and took action which did not conflict with the EOPs.

B. correct because ARP immediate actions should always be performed irrespective of the EOPs.

C. in-correct because an ARP should not be performed unless directed by the EOPs.

D. in-correct because while in the EOPs, the CRS should direct any actions not specified in the EOPs.

ANSWER:	A
QUESTION TYPE:	RO
KA# & KA VALUE:	2.4.11 & 3.4 - Knowledge of abnormal condition procedures.
REFERENCE:	
SOURCE:	Bank Question – Generic Knowledge and Abilities
LEARNING OBJECTIVE:	CAF
RATING:	1
ATTACHMENTS:	None
JUSTIFICATION:	ARP immediate actions can be taken that do not conflict with the EOPs. Therefore the correct answer is A.
10CFR55 BASIS:	10CFR55.41 (10)
COMMENTS:	Q 68

The EOP term "SECONDARY CONTAINMENT" is defined as the:

A. structure immediately adjacent to the reactor building that houses the safety related systems and subsystems required for safe shutdown of the reactor.

B. airtight volume immediately adjacent to and surrounding the reactor pressure vessel consisting of the drywell and wetwell.

C. airtight volume immediately adjacent to or surrounding the primary containment.

D. buildings and structures outside the reactor building that are required for safe shutdown of the reactor.

ANSWER:	C ✓
QUESTION TYPE:	RO
KA# & KA VALUE:	2.4.17 & 3.1 - Knowledge of EOP terms and definitions.
REFERENCE:	Procedure 5.0.10, Emergency Operating Procedure, Revision 7, Page 31.
SOURCE:	New Question – Generic Knowledges and Abilities
LEARNING OBJECTIVE:	CAF
RATING:	1
ATTACHMENTS:	None
JUSTIFICATION:	The referenced procedure defines secondary containment as the airtight volume immediately adjacent to or surrounding the primary containment. Therefore the correct answer is C.
10CFR55 BASIS:	10CFR55.41 (10)
COMMENTS:	Q 69

During a pre-job briefing, the Health Physics Supervisor states that, "The general area radiation level is 63 mr/hr and there is loose surface contamination that measures 752 dpm/1000cm^2 beta-gamma."

This area should be posted as a:

A. Radiation Area.

B. High Radiation Area.

C. Radiation and Contaminated Area.

D. High Radiation and Contaminated Area.

ANSWER:	A
QUESTION TYPE:	RO
KA# & KA VALUE:	2.3.4 & 2.5 - Knowledge of radiation exposure limits and contamination control including permissible levels in excess of those authorized.
REFERENCE:	CAF
SOURCE:	Bank Question – Generic Knowledges and Abilities
LEARNING OBJECTIVE:	CAF
RATING:	1
ATTACHMENTS:	None
JUSTIFICATION:	The correct answer is A per the facility bank question.
10CFR55 BASIS:	10CFR55.41 (4)
COMMENTS:	Q 70

The plant is at 25% power following a maintenance outage for work in the drywell. Primary Containment is being inerted, when the EO reported the Liquid Nitrogen Storage Tank Level at 49 inches and going down slow on CN-LIS-1. ADS header pressure has been steady at 149 psig for the last 4 minutes.

This indicates the CIA Programmers have placed their respective banks in service:

A. and CIA-V-39A and 39B remained open.

B. but stopped at step 1 and CIA-V-39A and 39B remained open.

C. but stopped at step 1 and CIA-V-39A and 39B have isolated.

D. and CIA-V-39A and 39B have isolated.

ANSWER:	D
QUESTION TYPE:	RO
KA# & KA VALUE:	2.3.9 & 2.5 - Knowledge of the process for performing a containment purge.
REFERENCE:	Facility Question Bank
SOURCE:	Bank Question LO00284
LEARNING OBJECTIVE:	CAF
RATING:	2
ATTACHMENTS:	None
JUSTIFICATION:	The correct answer is D per the facility question bank.
10CFR55 BASIS:	10CFR55.41 (4)
COMMENTS:	Q 71

The basis for establishing reactor water level +13 inches to +54 inches during an emergency (EOP) event is that this level band:

A. provides extra time for starting alternate high pressure systems.

B. allows the use of steam driven systems (RCIC and reactor feedwater) and resetting the scram.

C. will prevent an inadvertent low pressure ECCS initiation.

D. ensures sufficient inventory to prevent reactor water level going below TAF during an emergency depressurization.

ANSWER:	B
QUESTION TYPE:	RO
KA# & KA VALUE:	2.4.18 & 2.7 - Knowledge of the specific bases for EOPs.
REFERENCE:	Facility Exam Bank
SOURCE:	Bank Question LR00840
LEARNING OBJECTIVE:	CAF
RATING:	1
ATTACHMENTS:	None
JUSTIFICATION:	The correct answer is B per the facility bank question.
10CFR55 BASIS:	10CFR55.41 (10)
COMMENTS:	Q 72

Following a small steam line break, drywell temperature has increased by about 100 deg. F. IF RPV water level remains constant, THEN indicated RPV water level will be:

A. lowering as heating of the reference leg increases delta-P.

B. lowering as heating of the refernece leg decreases delta-P.

C. rising as heating of the reference leg decreases delta-P.

D. rising as heating of the reference leg increases delta-P.

ANSWER:	C
QUESTION TYPE:	RO
KA# & KA VALUE:	295028/2.4.4 & 4.0 - Ability to recognize abnormal indications for a system operating parameters which are entry-level condtions for emergency and abnormal operating procedures.
REFERENCE:	Facility Exam Bank
SOURCE:	Bank Question LX00308
LEARNING OBJECTIVE:	CAF
RATING:	1
ATTACHMENTS:	None
JUSTIFICATION:	The correct answer is C per the facility bank question.
10CFR55 BASIS:	10CFR55.41 (10)
COMMENTS:	Q 73

The power supply for the Intermediate Range Monitor (IRM) F neutron detector is:

A. PP-8A.

B. S1-2.

C. DP-SO-B.

D. RPS Trip System B.

ANSWER:	C
QUESTION TYPE:	RO
KA# & KA VALUE:	215003K2.01 & 2.5 - IRM/IRM channels/detectors.
REFERENCE:	SD000188, DC Power Distribution System, Revision 7, Page 30
SOURCE:	New Question - RO Tier 2, Group 1.
LEARNING OBJECTIVE:	7656 - Predict the effect(s) a failure of 24 VDC will have on: c. IRM
RATING:	1
ATTACHMENTS:	None
JUSTIFICATION:	The IRM F detector is powered from DP-SO-B. Therefore the correct answer is C.
10CFR55 BASIS:	10CFR55.41 (7)
COMMENTS:	Q 74

The plant is being shutdown by control rod insertion following a short run at power. The following conditions exist:

- Reactor Pressure is at 172 psig and lowering via the bypass valves
- Reactor Power - 70 on IRM Range 5
- Reactor Level - + 36 inches in automatic

A scram then occurs.

The scram could have been caused by:

A. increased voiding in the core causing a power increase and cause a scram on IRM upscale.

B. pressure fluctuations from pressure control on the BPVs cause a scram on IRM upscale.

C. low reactor pressure resulting in low Feed Pump discharge pressure and a scram on low reactor level.

D. a pressure reduction causing a reactor power decrease and a scram on IRM downscale. a

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ANSWER:	B
QUESTION TYPE:	RO
KA# & KA VALUE:	295014AA2.03 & 4.0 - Cause of Reactivity Addition.
REFERENCE:	Facility Bank
SOURCE:	Bank Question - Generic Knowledges and Abilities
LEARNING OBJECTIVE:	CAF
RATING:	3
ATTACHMENTS:	None
JUSTIFICATION:	Answer A is incorrect because increased voiding will cause a power decrease. Answer C is incorrect because reactor pressure is low enough for the condensate system to maintain reactor level. Answer D is incorrect because a pressure decrease will cause an increase in power with the decrease in RCS temperature. Answer C is correct because pressure fluctuations will cause

	RCS temperature and power fluctuations will would cause the IRMs to trip on Upscale power.
10CFR55 BASIS:	10CFR55.41 (10)
COMMENTS:	Q75