QUESTION 1 Rev 0

Examination Outline Cross-Reference:	Level		RO ☑	SRO ☐
	Tier #	1	Group #	1
	K/A #	295001	AK1.02	IR 3.3

Knowledge of the operational applications of power/flow distribution as it applies to partial or complete loss of forced core circulation.

Proposed Question:

With the plant operating at 100% power, both Reactor Recirculation Pumps spuriously downshifted to SLOW speed. The following conditions exist:

Reactor Power 68%
Core Flow 42 Mlbm / hr
Both channels of Period Based Detection System (PBDS) are operable.

Which of the following actions should be performed by the ATC operator?

A. Insert a reactor scram

B. Exit the region by up shifting the Recirculation pumps and fully opening the Flow Control Valves

C. Exit the region by inserting control rods

D. Continued operation under these conditions is allowed provided FCBB is ≤1.0 and APRM FCTR cards are taken to SETUP mode.

Proposed Answer: C.

Explanation:
A. Reactor scram is required if in Exclusion Region. Given parameters are in the Restricted Region. A scram in this region is only required if PBDS is inop.
B. Although exiting the region is required, up shifting the pumps is not authorized.
C. Correct-Exiting the regions is required due to the entry being unexpected. Exiting by inserting control rods is authorized.
D. Exiting the region is required. Placing the FCTR cards in SETUP is used during controlled entry into this region during plant statup.

Technical Reference(s): AOP-0024

Proposed references to be provided to applicants during examination: Power to Flow Map only

Learning Objective: RLP-HLO-534 Obj 4

Question Source: New

Question History: Last NRC Exam NA

Cognitive Level: Memory or Fundamental Knowledge ☐ Comprehension or Analysis ☑3

10 CFR Part 55 Content: 55.41.b10

Comments:

QUESTION 2 Rev 0

Examination Outline Cross-Reference:	Level		RO ☑ SRO ☐
	Tier #	1	Group #1
	K/A #	295003	AK3.04 IR 3.0

Knowledge of the reasons for ground isolation as it applies to partial or complete loss of AC.

Proposed Question:

A ground fault on ENS-SWG1A has resulted in a trip of ENS-ACB06. The white light indications above ENS-ACB04 and ENS-ACB07 are extinguished indicating these breakers are locked out.

Why are the breakers locked out?

- ENS-ACB06, NORMAL SUPPLY BRKR TO STBY BUS ENS-SWG1A.
- ENS-ACB04, ALTERNATE SUPPLY BRKR TO STBY BUS ENS-SWG1A
- ENS-ACB07 DIESEL GENERATOR 1A SUPPLY TO ENS-SWG1A

A. To prevent closing the breaker onto a faulted bus.

B. The undervoltage condition has resulted in a loss of control power.

C. Automatic re-energization of the bus is locked out unless a LOCA signal is present.

D. The diesel generator has not developed adequate voltage to allow energization of the bus.

Proposed Answer: A.

Explanation:
A. Correct - With a fault present on the bus, the alternate supply breakers are locked until the fault is removed. This preserves the alternate power sources.
B. Removal of control power fuses would also cause the white lights to extinguish and prevent closure of the breaker, but in this case the known ground fault causes the breakers to be locked out.
C.The alternate breakers do not supply the bus with a fault present, even during a LOCA.
D. The diesel must develop adequate voltage, but the white light on the output breaker is not affected by diesel voltage.

Technical Reference(s): R-STM-0300

Proposed references to be provided to applicants during examination: NA

Learning Objective: RLP-STM-0300 Obj 18

Question Source: New

Question History: Last NRC Exam NA

Cognitive Level: Memory or Fundamental Knowledge ☑2 Comprehension or Analysis ☐

10 CFR Part 55 Content: 55.41.b7

Comments:

QUESTION 3 Rev 0

Examination Outline Cross-Reference:	Level		RO ☑	SRO ☐
	Tier #	1	Group #	1
	K/A #	295004 AK2.03		IR 3.3

Knowledge of the interrelations between partial or total loss of DC power and DC loads.

Proposed Question:

A loss of BYS-SWG1A has occurred.

Which of the following are affected by this condition?

A. NPS-SWG1A

B. NHS-MCC12A

C. NNS-SWG3A

D. NNS-SWG2A

Proposed Answer: A.

Explanation:
A.-Correct-NPS-SWG1A will experience a loss of control power due to the loss of BYS-SWG1A
B.. NHS-MCC12A receives control power from BXY-PNL01 and is not affected.
C. NNS-SWG3A receives control power from BXY-PNL01 and is not affected.
D. NNS-SWG2A receives control power from BYS-PNL01 and is not affected.

Technical Reference(s): EE-001AC, AOP-0014

Proposed references to be provided to applicants during examination: NA

Learning Objective: RLP-OPS-H0532 Obj 14

Question Source: New

Question History: Last NRC Exam NA

Cognitive Level: Memory or Fundamental Knowledge ☑3 Comprehension or Analysis ☐

10 CFR Part 55 Content: 55.41.b7

Comments:

QUESTION 4 Rev 0

Examination Outline Cross-Reference:	Level	RO ☑	SRO ☐
	Tier #1	Group #1	
	K/A # 295005 AA1.02	IR 3.6	

Ability to operate and/or monitor RPS as it applies to main turbine generator trip.

Proposed Question:

A plant startup is in progress in accordance with GOP-0001, Plant Startup.
Reactor power is 27%.

The main turbine and generator have just tripped due to a drop in Turbine Bearing Oil Header pressure due to a leak in the Turbine Lube Oil System. No reactor high pressure nor high neutron flux signal has been generated.

Which of the following describes the response of the RPS system to the turbine trip?

A. RPS trips systems are de-energized, Backup scram valves are energized.

B. RPS trips systems are energized, Backup scram valves are de-energized.

C. RPS trips systems are de-energized, Backup scram valves are de-energized.

D. RPS trips systems are energized, Backup scram valves are energized.

Proposed Answer: B.

Explanation
A. With reactor power <30.4%, the RPS trip from a turbine trip is bypassed so RPS remains energized and Backup scram valves remain energized.
B.-Correct. See "A"
C. See "A".
D. See "A".

Technical Reference(s): R-STM-0508

Proposed references to be provided to applicants during examination: NA

Learning Objective: RLP-STM-0508 Obj 2, 3

Question Source: Modified Bank # RBS 2008 NRC #4

Question History: Last NRC Exam NA

Cognitive Level: Memory or Fundamental Knowledge ☐ Comprehension or Analysis ☑3

10 CFR Part 55 Content: 55.41.b7

Comments: This KA was selected on the River Bend 2008 NRC exam outline. This question was modified from the question on the 2008 exam. The stem was changed to cause one of the original distractors to be correct.

QUESTION 5 Rev 0

Examination Outline Cross-Reference:	Level	RO ☑	SRO ☐
	Tier # 1	Group # 1	
	K/A #	295006 AA1.05	IR 4.2

Ability to operate and/or monitor neutron monitoring system as it applies to scram.

Proposed Question:

With the plant operating at 100%, a reactor scram occurs. All rods have fully inserted. Only immediate operator actions have been taken.

In accordance with AOP-0001, Reactor Scram, which of the following describes the proper method of monitoring decreasing neutron count rates following the scram?

A. Monitor APRM recorders.

B. Monitor SRM recorders.

C. Drive in SRM and IRM detectors, place SRM Mode Selector switch to OPERATE, and monitor APRM/IRM recorders, until SRMs are onscale.

D. Drive in SRM and IRM detectors, place SRM Mode Selector switch to OPERATE, select IRM on APRM/IRM recorders and monitor IRMs until SRMs are onscale.

Proposed Answer: D.

Explanation:
A. After the scram, APRM recorders will be downscale.
B. SRMs must be driven in before providing valid accourate countrate information.
C. APRM/IRM recorder switches must be placed in IRM to provide IRM data.
D. Correct-Once the detectors are driven in and SRM mode selector is in OPERATE, and IRM is selected on the APRM/IRM recorders, countrates can be monitored on IRMs (Range 5 after a scram) and then on SRMs as countrates lower.

Technical Reference(s): AOP-0001, R-STM-0503

Proposed references to be provided to applicants during examination: NA

Learning Objective: RLP-STM-0503 Obj 1, 6, 9

Question Source: New

Question History: Last NRC Exam NA

Cognitive Level: Memory or Fundamental Knowledge ☑3 Comprehension or Analysis ☐

10 CFR Part 55 Content: 55.41.b7

Comments:

QUESTION 6 Rev 0

Examination Outline Cross-Reference: Level RO ☑ SRO ☐
Tier # 1 Group # 1
K/A # 295016 AA2.04 IR 3.9

Ability to determine and interpret suppression pool temperature as it applies to control room abandonment.

Proposed Question:

A fire has occurred in the Main Control room. The area has been evacuated and control has been transferred to remote shutdown system in accordance with AOP-0031, Shutdown from Outside the Main Control Room.

Under these conditions, where can suppression pool temperature be monitored?

A. Division 1 Remote Shutdown Panel, only.

B. Division 2 Remote Shutdown Panel, only.

C. Either Division 1 or Division 2 Remote Shutdown Panels.

D. Temperature can only be monitored locally.

Proposed Answer: C.

Explanation:
A. Both panels have Sup Pool Temp information.
B. See “A”.
C. Correct.
D. See “A”.

Technical Reference(s): R-STM-0200; AOP-0031

Proposed references to be provided to applicants during examination: NA

Learning Objective: RLP-STM-0200 Obj 5

Question Source: New

Question History: Last NRC Exam NA

Cognitive Level: Memory or Fundamental Knowledge ☑4 Comprehension or Analysis ☐

10 CFR Part 55 Content: 55.41.b10

Comments:

QUESTION 7 Rev 0

Examination Outline Cross-Reference:	Level		RO ☑ SRO ☐
	Tier #	1	Group # 1
	K/A #	295018 AK1.01	IR 3.5

Knowledge of the operational applications of effects on components/system operation as it applies to partial or total loss of CCW.

Proposed Question:

The unit is operating at 100% power when a complete loss of Turbine Plant Component Cooling Water (CCS) occurs.

Which of the following lists the critical equipment which has lost cooling that requires the operator to scram the reactor as directed by AOP-0012, Loss of Turbine Plant Component Cooling Water?

A. Auxiliary Boiler Recirc pumps and offgas refrigeration units

B. Condenser air removal and generator stator cooling pumps

C. Heater drain and condenser air removal pumps

D. Reactor feedwater and condensate pumps

Proposed Answer: D.

Explanation:
A. Although both these components are cooled by CCS, the major CCS loads which if in service require a scram are the Condensate and FWS pumps. Additionally, AB Recirc pumps are typically not in service.
B. Same as “A” and under these conditions, air removal pumps are not in service.
C. Air removal pumps not inservice under these conditions.
D. Correct -CCS loads which if in service require a scram are the Condensate and FWS pumps.

Technical Reference(s): AOP-0012

Proposed references to be provided to applicants during examination: NA

Learning Objective: RLP-OPS-AOP012 Obj 2 & 7

Question Source: Bank # RBS-NRC-104

Question History: Last NRC Exam RBS NRC 2000

Cognitive Level: Memory or Fundamental Knowledge ☑2 Comprehension or Analysis ☐

10 CFR Part 55 Content: 55.41.b10

Comments:

QUESTION 8 Rev 0

Examination Outline Cross-Reference:	Level	RO ☑	SRO ☐
	Tier # 1	Group # 1	
	K/A # 295019 AA2.01	IR 3.5	

Ability to determine and interpret instrument air pressure as it applies to partial or total loss of instrument air.

Proposed Question:

Following a perturbation in the Instrument Air System, the following conditions exist:

- SAS-AOV134, IAS-SAS CROSS TIE VALVE is OPEN
- SAS-AOV133, SERVICE AIR HEADER BLOCK VALVE is OPEN
- IAS pressure is now stable
- 1 IAS compressor is in service, 1 SAS compressor is in service

Which of the following describes the lowest system pressure reached and the location of the leak which caused the perturbation?

A. Pressure remained above 113 psig. The leak was due to a malfunction of the IAS dryer during regeneration.

B. Pressure went below 113 psig. The leak was due to a malfunction of the IAS dryer during regeneration.

C. Pressure remained above 110 psig. The leak was due to a large IAS pipe break in the Turbine building.

D. Pressure went below 110 psig. The leak was due to a large IAS pipe break in the Turbine building.

Proposed Answer: B.

Explanation
A. SAS-AOV134 opens at 113 psig, therefore pressure went below 113 psig.
B. Correct - SAS-AOV134 opens at 113 psig, therefore pressure went below 113 psig. At 113 psig, IAS-AOV300A(B) isolate to isolate leaks due to dryer malfunction. Since pressure has stabilized, this was the location of the leak.
C. Pressure did remain above 110 psig based on SAS-AOV133 still being open, but if the leak was due to a large pipe break in the turbine bldg, pressure would not have stabilized based upon the SAS-AOV134 opening.
D. Pressure did not go below 110 psig since SAS-AOV133 is still open.

Technical Reference(s): AOP-0008

Proposed references to be provided to applicants during examination: NA

Learning Objective: RLP-HLO-527 Obj 4, 6; RLP-STM-0121 Obj 3

Question Source: New Question History: Last NRC Exam NA

Cognitive Level: Memory or Fundamental Knowledge ☐ Comprehension or Analysis ☑3

10 CFR Part 55 Content: 55.41.b10 Comments:

QUESTION 9 Rev 0

Examination Outline Cross-Reference:	Level		RO ☑	SRO ☐
	Tier #	1	Group #	1
	K/A #	295021 AK2.03		IR 3.6

Knowledge of the interrelations between loss of shutdown cooling and RHR shutdown cooling.

Proposed Question:

Refueling is in progress with RHR “A” in normal Shutdown Cooling lineup.

Which of the following valve positions will result in a loss of shutdown cooling?

A. E12-MOVF008, RHR SHUTDOWN COOLING OUTBD ISOL VALVE, Fully CLOSED

B. E12-MOVF048A, RHR A HX BYPASS VALVE, Fully CLOSED

C. E12-MOVF037A, RHR A TO UPPER POOL FPC ASSIST, Fully OPEN

D. E12-MOVF053A, RHR PUMP A SDC INJECTION VALVE, Fully OPEN

Proposed Answer: A.

Explanation
A. Correct-If this valve is closed, it will cause a loss of the suction path for RHR ‘A’ and a trip of the pump.
B. Closing the bypass will result in more cooling as flow is forced through the heat exchanger.
C. With refueling in progress, the RPV head is removed and an acceptable return flowpath is via E12-MOVF037A.
D. E12-MOVF053A is the normal SDC return path to the “A” FWS line for SDC return flow and is normally open.
Technical Reference(s): R-STM-0204

Proposed references to be provided to applicants during examination: NA

Learning Objective: RLP-STM-0204 Obj 2, 5, 10

Question Source: New

Question History: Last NRC Exam NA

Cognitive Level: Memory or Fundamental Knowledge ☐ Comprehension or Analysis ☑2

10 CFR Part 55 Content: 55.41.b7

Comments:

QUESTION 10 Rev 0

Examination Outline Cross-Reference:	Level		RO ☑	SRO ☐
	Tier #	1	Group #	1
	K/A #	295023 AA2.02		IR 3.4

Ability to determine and interpret fuel pool level as it applies to refueling accident.

Proposed Question:

During movement of irradiated fuel in the RPV, a minimum water level of __(1)___above the ___(2)____ is required to ensure that the design basis for the postulated fuel handling accident analysis during refueling operations is met.

A. (1) 27 feet, (2) RPV flange

B. (1) 27 feet, (2) top of irradiated fuel assemblies seated in the RPV

C. (1) 23 feet, (2) RPV flange

D. (1) 23 feet, (2) top of irradiated fuel assemblies seated in the RPV

Proposed Answer: C.

Explanation
A. Required water level is 23 feet. 27 feet is the nominal water level in the Spent Fuel Pool.
B. Required water level is 23 feet (See "A") and level is measured from the flange during movement of irradiated assemblies.
C. Correct.
D. 23 feet is correct, but level is measured from the flange in the event the bundle being moved is dropped and remains at flange level.

Technical Reference(s): R-STM-0055; STP-000-0005; TS 3.9.6

Proposed references to be provided to applicants during examination: NA

Learning Objective: R-STM-0055 Obj 11, 13

Question Source: New

Question History: Last NRC Exam NA

Cognitive Level: Memory or Fundamental Knowledge ☑3 Comprehension or Analysis ☐

10 CFR Part 55 Content: 55.41.b10

Comments:

QUESTION 11 Rev 0

Examination Outline Cross-Reference: Level RO ☑ SRO ☐
Tier # 1 Group # 1
K/A # 295024 EA2.01 IR 4.2

Ability to determine and interpret drywell pressure as it applies to high drywell pressure.

Proposed Question:

While operating at rated conditions, a transient occurred resulting in a reactor scram. All controls rods are inserted.
The following conditions exist:

- RPV Level 18 inches
- RPV pressure 675 psig
- Drywell pressure 1.82 psid
- Steam Tunnel Temp 125°F
- RCIC Room Temp 100°F
- RWCU Room Temp 102°F

Based on the above parameters, the transient was due to a primary system leak in the ______________.

A. Drywell

B. Main Steam tunnel

C. RCIC room

D. RWCU pump room

Proposed Answer: A.

Explanation:
A. Correct. Based on elevated pressure in the drywell.
B. Main Steam tunnel temp is normal.
C. RCIC room temp is normal.
D. RWCU room temp is normal.

Technical Reference(s): STP-000-0001 (Plant data), AOP-0003, EOP-0001

Proposed references to be provided to applicants during examination: NA

Learning Objective: RLP-OPS-HLO-512 Obj 4

Question Source: New

Question History: Last NRC Exam NA

Cognitive Level: Memory or Fundamental Knowledge ☐ Comprehension or Analysis ☑2

10 CFR Part 55 Content: 55.41.b5 Comments:

QUESTION 12 Rev 0

Examination Outline Cross-Reference:	Level		RO ☑ SRO ☐
	Tier #	1	Group # 1
	K/A #	295025 EK1.03	IR 3.6

Knowledge of the operational applications of SRV tailpipe pressure/temperature relationship as it applies to high reactor pressure.

Proposed Question:

The initial opening of a Safety Relief Valve due to high reactor pressure occurs at ___________. The tailpipe temperature associated with this pressure is __________as compared to if the SRV opened at 450 psig.

A. 1133 psig; higher

B. 1133 psig; lower

C. 1103 psig; higher

D. 1103 psig; lower

Proposed Answer: B.

Explanation:
A. Pressure set point is correct; Tailpipe temp will be lower due to saturated steam at 450 psig having a higher enthalpy.
B.Correct-Initial SRV opens at 1133 psig. Tailpipe temp will be lower due to saturated steam at 450 psig having a higher enthalpy.
C. 1103 psig is common mistake due to this being the value prior to power uprate and is the current Low Low Set setpoint for the 2nd lowest opening SRV. See “A” & “B”.
D. See “C”.

Technical Reference(s): Mollier diagram; R-STM-0109

Proposed references to be provided to applicants during examination: Steam Tables

Learning Objective: RLP-STM-0109 Obj 4; RLP-HLO-538 Obj 10

Question Source: New

Question History: Last NRC Exam NA

Cognitive Level: Memory or Fundamental Knowledge ☐ Comprehension or Analysis ☑2

10 CFR Part 55 Content: 55.41.b8

Comments:

QUESTION 13 Rev 0

Examination Outline Cross-Reference:	Level		RO ☑	SRO ☐
	Tier #	1	Group #	1
	K/A #	295026 EA1.01	IR 4.1	

Ability to operate and/or monitor suppression pool cooling as it applies to suppression pool high water temperature.

Proposed Question:

Following an ATWS, both loops of Residual Heat Removal are in the Suppression Pool Cooling mode with maximum flow through the heat exchangers.

- Reactor power <5%
- RPV Level -50 inches, slowly raising to normal band
- RPV Pressure 0 psig
- Suppression Pool Level 19 feet 11 inches
- Suppression Pool Temp 140°F
- RHR A in Sup Pool Cooling @ 5400 gpm, SWP flow @ 5500 gpm
- RHR B in Sup Pool Cooling @ 5600 gpm, SWP flow @ 5700 gpm

Both divisions of Standby Service Water are in service due to a loss of Normal Service Water.

Based on these conditions, which of the following should be of concern to the operator?

A. RHR B system flow has exceeded limits.

B. SWP flow has exceeded limits.

C. RHR pumps may experience air entrainment due to vortex limit concerns.

D. RHR pumps may experience cavitation due to NPSH concerns.

Proposed Answer: A.

Explanation:
A. Correct-RHR shell side flow limit is 5550 gpm.
B. SWP flow is less than 5800 gpm per loop limit.
C. Vortex limit concerns are at <10 feet SP Level
D. NPSH concerns begin at 160°F

Technical Reference(s): SOP-0031, EOP-0001

Proposed references to be provided to applicants during examination: NA

Learning Objective: RLP-HLO-0511 Obj 6; RLP-STM-0204 Obj 8

Question Source: Modified Bank RBS 2008 NRC Exam #12Question History: Last NRC Exam NA

Cognitive Level: Memory or Fundamental Knowledge ☐ Comprehension or Analysis ☑3

10 CFR Part 55 Content: 55.41.b7

Comments: This KA was selected on the River Bend 2008 NRC exam outline. This question was modified from the question on the 2008 exam. The stem was changed to cause one of the original distractors to be correct.

QUESTION 14 Rev 0

Examination Outline Cross-Reference:	Level		RO ☑ SRO ☐
	Tier #	1	Group # 1
	K/A #	295027	EK3.01 IR 3.7

Knowledge of the reasons for emergency depressurization as it applies to high containment temperature.

Proposed Question:

Why is Emergency Depressurization required when containment temperature reaches 185°F?

To minimize further release of energy from the RPV to containment…

A. …because excessive containment temperatures will begin to affect RPV level instrumentation accuracy.

B. …to ensure that the design temperature limit is not exceeded during a LOCA.

C. …because excessive temperature will result in lifting of Service Water relief valves challenging the 30 day safe shutdown Standby Cooling Tower water inventory.

D. …because the containment design temperature has been exceeded and to maintain equipment operability for as long as possible.

Proposed Answer: D.

Explanation:
A. Caution 1 of EOP-1 identifies containment temperatures well below 185°F where containment temps affect instrumentation. (100°F).
B. 185°F is the design temp. This is the reason for not exceeding the normal operating limit.
C. This is the reason drywell cooling service water isolation valves are not open above 200°F.
D. Correct-185°F is the containment design temperature limit.

Technical Reference(s): EPSTG -0002, R-STM-0057

Proposed references to be provided to applicants during examination: NA

Learning Objective: HLO-514 Obj 5; RLP-STM-0057 Obj 4

Question Source: New

Question History: Last NRC Exam NA

Cognitive Level: Memory or Fundamental Knowledge ☑3 Comprehension or Analysis ☐

10 CFR Part 55 Content: 55.41.b7

Comments:

QUESTION 15 Rev 0

Examination Outline Cross-Reference:	Level		RO ☑ SRO ☐
	Tier #	1	Group # 1
	K/A #	295030 EA1.06	IR 3.4

Ability to operate and/or monitor condensate storage and transfer (makeup to the suppression pool) as it applies to low suppression pool water level.

Proposed Question:

A leak in the Main Steam tunnel has resulted in the following conditions:

- RPV Level -25 inches, being restored with RHR Pump “C”
- Sup Pool Level 19 feet 2 inches
- Drywell Temp 125°F
- Condenser Vac 0” Hg
- MS Tunnel Temp 147°F

Which of the following actions should be performed?

A. Anticipate Emergency Depressurization

B. Maximize Drywell Cooling by running 6 DW Coolers

C. Verify a Condensate Transfer pump is running and open CNS-V281, CNDS TRANSFER LINE TO SUPP POOL SPLY VALVE

D. Bypass IAS-MOV106 isolation interlocks

Proposed Answer: C.

Explanation:
A. No parameter warrant anticipating ED and condenser must be available to anticipate ED.
B. Maximizing DW cooling is not authorize until above 145°F
C. Correct – Sup Pool level is low. These actions will add water to the pool.
D. No authorization to bypass these interlocks. In EOP-0001, this is authorized only if SLC is being used for level control. RHR C is restoring level.

Technical Reference(s): EOP-0005, Enclosure 30

Proposed references to be provided to applicants during examination: NA

Learning Objective: RLP-HLO-514 Obj 3; RLP-STM-0106 Obj 8; RLP-HLO-516 Obj 1

Question Source: New

Question History: Last NRC Exam NA

Cognitive Level: Memory or Fundamental Knowledge ☐ Comprehension or Analysis ☑3

10 CFR Part 55 Content: 55.41.b7

Comments:

QUESTION 16 Rev 0

Examination Outline Cross-Reference:	Level		RO ☑	SRO ☐
	Tier #	1	Group #	1
	K/A #	295031 EK1.02	IR 3.8	

Knowledge of the operational applications of natural circulation as it applies to reactor low water level.

Proposed Question:

The plant has experienced a low water level condition which caused the Reactor Recirculation Pumps to trip to OFF. Level has NOT dropped below the top of active fuel.

Under these conditions, natural circulation…

A. is occurring because level is above the jet pumps suction.

B. is NOT occurring because level is below the steam separator return to the downcomer region.

C. is occurring because level is above the steam separator return to the downcomer region.

D. is NOT occurring because level is below the jet pumps suction.

Proposed Answer: B.

Explanation:
A. Minimum natural circulation level 75 inches. The recirc pumps trip to OFF at -43 inches, so level is significantly below the minimum natural circulation level. The minimum natural circulation level is based on the location of the steam separator drains, not the jet pump suction location.
B. Correct. See “A”.
C. See “A”
D. See “A”

Technical Reference(s): AOP-0051, R-STM-0053

Proposed references to be provided to applicants during examination: NA

Learning Objective: RLP-STM-0053 Obj 19 RLP-HLO-543 Obj 5

Question Source: New

Question History: Last NRC Exam NA

Cognitive Level: Memory or Fundamental Knowledge ☐ Comprehension or Analysis ☑3

10 CFR Part 55 Content: 55.41.b10

Comments:

QUESTION 17 Rev 0

Examination Outline Cross-Reference:	Level		RO ☑	SRO ☐
	Tier #	1	Group #	1
	K/A #	295037 EK2.04		IR 4.4

Knowledge of the interrelations between scram condition present and reactor power above APRM downscale or unknown and SBLC system.

Proposed Question:

The plant has experienced an Anticipated Transient Without Scram (ATWS). Reactor power is 25%.

(1) How will the Standby Liquid Control System respond to this condition?, and
(2) Which of the following plant conditions require or initiate this response?

A. (1) SLC automatically initiates.
(2) Neutron oscillations of 10% commence and continue.

B. (1) SLC automatically initiates.
(2) Suppression pool temperature reaches 110°F.

C. (1) No response. SLC requires manual initiation.
(2) Neutron oscillations of 10% commence and continue.

D. (1). No response. SLC requires manual initiation.
(2) Suppression pool temperature reaches 110°F.

Proposed Answer: D.

Explanation:
A. SLC has no auto initiation capability.
B. See “A”.
C. SLC requires manual initiation if oscillations reach 25%.
D. Correct-EOP-2 requires manual initiation of SLC before SP Temp reaches 110°F.

Technical Reference(s): EOP-0002, R-STM-0201

Proposed references to be provided to applicants during examination: NA

Learning Objective: RLP-OPS-HLO-513 Obj 5; RLP-STM-0201 Obj 1

Question Source: New

Question History: Last NRC Exam NA

Cognitive Level: Memory or Fundamental Knowledge ☑2 Comprehension or Analysis ☐

10 CFR Part 55 Content: 55.41.b7

Comments:

QUESTION 18 Rev 0

Examination Outline Cross-Reference:	Level		RO ☑	SRO ☐
	Tier #	1	Group #	1
	K/A #	295038 EK3.03		IR 3.7

Knowledge of the reasons for control room ventilation isolation as it applies to high off-site release rate.

Proposed Question:

The plant has experienced a leak in the steam tunnel resulting in elevated radiation levels throughout the plant.

RMS-RE13A(B) MAIN CONTROL ROOM LOCAL INTAKE radiation monitors are in ALARM.

Why does HVC-MOV1A(B) CR AHU OUTSIDE AIR SPLY isolate during this condition?

A. To protect personnel working in all areas of the plant from elevated radiological conditions by processing intake air through the HVC filter trains.

B. To protect all Main Control Room personnel from elevated radiological conditions by processing intake air through the HVC filter trains.

C. To protect personnel working in all areas of the Control Building from elevated radiological conditions by processing intake air through the HVC filter trains.

D. To protect offsite personnel from elevated radiological conditions by processing exhaust air through the HVC filter trains.

Proposed Answer: B.

Explanation:
A. Only the MCR and certain areas of the CB 116' elevation receive filtered air from HVC filter trains.
B. Correct – See "A".
C. Certain areas of the CB do not receive filtered air from HVC filter trains (70', 98; portions of 116' elevations).
D. HVC-AODs do not isolate exhaust air. There is no potential leak source in the CB, so building isolation is not required for this purpose as in other areas (Containment, Auxiliary Building).

Technical Reference(s): R-STM-0402

Proposed references to be provided to applicants during examination: NA

Learning Objective: RLP-STM-0402 Obj 3, 8, 10, 11

Question Source: New

Question History: Last NRC Exam NA

Cognitive Level: Memory or Fundamental Knowledge ☐ Comprehension or Analysis ☑3

10 CFR Part 55 Content: 55.41.b7

Comments:

QUESTION 19 Rev 0

Examination Outline Cross-Reference:	Level		RO ☑	SRO ☐
	Tier #	1	Group #	1
	K/A #	600000 G.2.4.49	IR 4.6	

Ability to perform without reference to procedures those actions that require immediate operation of system components and controls related to a plant fire on site..

Proposed Question:

A fire in the Main Control Room has resulted in implementation of AOP-0031, Shutdown From Outside the MCR.

Which of the following represent the Immediate Operator Actions of AOP-0031?

A. Evacuate the control room.

B. Place the mode switch in shutdown and evacuate the control room.

C. Place the mode switch in shutdown and verify all control rods have inserted.

D. Place the mode switch in shutdown and initiate HPCS, LPCS, and RCIC.

Proposed Answer: C.

Explanation:
A. Evacuate of the control room is a subsequent action after certain other actions are taken.
B. The mode switch to shutdown is an immediate action, but evacuation is a subsequent action.
C. Correct. The immediate operator actions for a fire in the control room requiring evacuation are to place the mode switch in shutdown and verify all rods inserted.
D. The mode switch to shutdown is an immediate action, initiation of HPCS, LPCS, and RCIC are subsequent actions that are only required if a fire is <u>not in progress.</u>

Technical Reference(s): AOP-0031

Proposed references to be provided to applicants during examination: NA

Learning Objective: RLP-HLO-0537 Obj 5

Question Source: New

Question History: Last NRC Exam NA

Cognitive Level: Memory or Fundamental Knowledge ☑3 Comprehension or Analysis ☐

10 CFR Part 55 Content: 55.41.b10

Comments:

QUESTION 20 Rev 0

Examination Outline Cross-Reference:	Level		RO ☑	SRO ☐
	Tier #	1	Group #	1
	K/A #	700000 AA1.03		IR 3.8

Ability to operate and/or monitor voltage regulator controls as it applies to generator voltage and electric grid disturbances.

Proposed Question:

The plant is operating at 100% with the following Main Generator parameters.

Generator VAR Loading +75 MVAR
Voltage Regulator AUTO

Subsequently, a drop in grid voltage occurred due to the loss of generation capability from several units supplying the grid in the area. River Bend remained online through the transient.

Which of the following describes the voltage regulator response to the grid disturbance?

A. Main Generator excitation amps will increase and VAR loading will increase.

B. Main Generator excitation amps will increase and VAR loading will decrease.

C. Main Generator excitation amps will decrease and VAR loading will decrease.

D. Main Generator excitation amps will remain the same and VAR loading will remain the same.

Proposed Answer: A.

Explanation:
A. Correct-The voltage regulator will raise excitation maintain generator terminal voltage constant. As a result, exciter field amps will increase. With the loss of other generating units, RBS will be required to carry a higher VAR loading as well.
B. See “A”.
C. See “A’
D. This answer would only be correct if the voltage regulator were in Manual.

Technical Reference(s): R-STM-0310

Proposed references to be provided to applicants during examination: NA

Learning Objective: RLP-STM-0310 Obj 2, 6, 10

Question Source: New

Question History: Last NRC Exam NA

Cognitive Level: Memory or Fundamental Knowledge ☐ Comprehension or Analysis ☑3

10 CFR Part 55 Content: 55.41.b7

Comments:

QUESTION 21 Rev 0

Examination Outline Cross-Reference:	Level		RO ☑	SRO ☐
	Tier #	1	Group #	2
	K/A #	295002 AA1.03		IR 3.4

Ability to operate and/or monitor RPS as it applies to loss of main condenser vacuum.

Proposed Question:

The plant is in Mode 1 with reactor power at 20%. A rupture of the main condenser expansion joint has resulted in condenser vacuum lowering to 5” Hg.

Which of the following describes the response of the Reactor Protection System (RPS)?

A. Reactor scrammed due to Turbine Stop Valve closure.

B. Reactor scrammed due to MSIV isolation.

C. Reactor remained critical with MSIVs open.

D. Reactor remained critical although the Main Turbine has tripped.

Proposed Answer: B.

Explanation:
A. The reactor will scram, but not due to TSV position. The TSV RPS trip is bypassed at 20% (<30.4%).
B. Correct-The MSIVs isolate on low vacuum (8.5” Hg). The reactor scrams on MSIV closure if the RPS mode switch is in RUN (Mode 1).
C. See “B”.
D. This would be correct if it were not for the MSIV scram. The turbine will trip on low vacuum (22.3“ Hg) and the RPS trip is bypassed at this power level.

Technical Reference(s): R-STM-0508; R-STM-0058

Proposed references to be provided to applicants during examination: NA

Learning Objective: R-STM-0508 Obj 2; R-STM-0058 Obj 2, 6

Question Source: New

Question History: Last NRC Exam NA

Cognitive Level: Memory or Fundamental Knowledge ☐ Comprehension or Analysis ☑3

10 CFR Part 55 Content: 55.41.b7

Comments:

QUESTION 22 Rev 0

Examination Outline Cross-Reference:	Level		RO ☑	SRO ☐
	Tier #	1	Group #	2
	K/A #	295010 AK1.02		IR 2.8

Knowledge of the operational applications of submergence vent control as it applies to high drywell pressure.

Proposed Question:

An ECCS suction piping failure has resulted in leakage of suppression pool inventory into the crescent area of the Auxiliary Building. Suppression Pool water level has lowered to 15 feet 0 inches.

Based on the above, what are the operational implications of a LOCA causing a high drywell pressure condition?

A. Inadequate submergence of horizontal vents.

B. Inadequate submergence of the SRV spargers,

C. Inadequate NPSH exists for the ECCS pumps.

D. Inadequate water inventory available for RPV level control.

Proposed Answer: A.

Explanation
A: Correct- Adequate submersion of the vents is considered to be 2 feet above the top of the highest vent (15'3"). At 15', the vents are not adequately submerged.
B. SRV sparger submersion limit is 13'.
C. NPSH concerns begin at 10'.
D. The inventory is not lost, it can be pump back to the Sup Pool if needed via the Sup Pool Pumpback System if needed for inventory. Additionally, the water inventory as an ECCS suction source does not aid in mitigating the high drywell pressure condition.

Technical Reference(s): EOP-0001, EOP-0002, R-STM-0057

Proposed references to be provided to applicants during examination: NA

Learning Objective: RLP-STM-0057 Obj 3; RLP-OPS-HLO-517 Obj 2

Question Source: New

Question History: Last NRC Exam NA

Cognitive Level: Memory or Fundamental Knowledge ☑3 Comprehension or Analysis ☐

10 CFR Part 55 Content: 55.41.b9

Comments:

QUESTION 23 Rev 0

Examination Outline Cross-Reference: Level RO ☑ SRO ☐
Tier # 1 Group # 2
K/A # 295012 AA2.02 IR 3.9

Ability to determine and interpret drywell pressure as it applies to high drywell temperature.

Proposed Question:

A LOCA has resulted in the following conditions:

- Drywell temperature 225°F
- Drywell pressure 2.2 psid

Which of the following describes the status of the drywell ventilation system?

A. Drywell cooling is <u>NOT</u> in service, but can be restored.

B. Drywell cooling is <u>NOT</u> in service, and can <u>NOT</u> be restored.

C. Drywell cooling is in service, Service Water should be isolated to the drywell.

D. Drywell cooling is in service, and may remain in service.

Proposed Answer: B.

Explanation:
A. Drywell cooling is not inservice due to the 1.68 psid drywell pressure isolation. Drywell cooling may not be restored because temperature is >200°F.
B. Correct-See “A”.
C. See “A”
D. See “A”

Technical Reference(s): R-STM-0409; EOP Enclosure 20

Proposed references to be provided to applicants during examination: NA

Learning Objective: RLP-STM-0409 Obj 5; 14

Question Source: New

Question History: Last NRC Exam NA

Cognitive Level: Memory or Fundamental Knowledge ☐ Comprehension or Analysis ☑3

10 CFR Part 55 Content: 55.41.b10

Comments:

QUESTION 24 Rev 0

Examination Outline Cross-Reference:	Level		RO ☑	SRO ☐
	Tier #	1	Group #	2
	K/A #	295015 G.2.4.47		IR 4.2

Ability to diagnose and recognize trends in an accurate and timely manner utilizing the appropriate control room reference material regarding an incomplete scram.

Proposed Question:

With the plant operating at 100% power, the main turbine tripped due to lowering condenser vacuum.

The following indications are present:

- H13-P680 scram solenoid 8 white lights are lit
- SCRAM PILOT VLV AIR HEADER LOW PRESSURE annunciator was <u>NOT</u> received
- Control rod density is equal to the control rod density prior to the turbine trip

Which of the following has caused the above conditions?

A. Reactor Protection System has failed to de-energize.

B. Scram Air Header has failed to depressurize.

C. Control Rod Drive System has experience a hydraulic lock.

D. Rod Control and Information System has locked up due to the rod pattern being outside the constraints of the Rod Pattern Controller.

Proposed Answer: A.

Explanation:
A. Correct – A turbine trip from 100% generates an RPS trip signal. The scram solenoid white lights being lit indicate that RPS has failed to de-energized.
B. If the stem information would have indicated that RPS HAD de-energized, this would have been a correct answer. The header does not depressurized until RPS de-energizes. The failure of RPS is what has caused the header to still be pressurized as indicated by the alarm given in the stem.
C. Had RPS been de-energized and the air header depressuzied, this would have been a correct answer. Rod motion has not started yet (RPS energized) so a hydraulic lock does not exist (SDV vents and drains still open).
D. Rod motion has not begun (Rod density unchanged) so RC&IS would not be locked up. Additionally, RC&IS lock up does not prevent rod motion due to a scram.

Technical Reference(s): EOP Enclosure 26

Proposed references to be provided to applicants during examination: EOP Enclosure 26

Learning Objective: RLP-STM-0508 Obj 7

Question Source: New

Question History: Last NRC Exam NA

Cognitive Level: Memory or Fundamental Knowledge ☐ Comprehension or Analysis ☑3

10 CFR Part 55 Content: 55.41.b10 Comments:

QUESTION 25 Rev 0

Examination Outline Cross-Reference:	Level		RO ☑	SRO ☐
	Tier #	1	Group #	2
	K/A #	295020 G.2.4.20		IR 3.8

Knowledge of the operational implications of EOP warnings, cautions, and notes regarding inadvertent containment isolation.

Proposed Question:

A component failure has resulted in an inadvertent containment isolation. The EOPs have been entered to mitigate the condition.

EOP Enclosure 20, DEFEATING DRYWELL COOLING ISOLATION INTERLOCKS is being implemented to restore cooling to the drywell.

What is the operational implication of performing this enclosure if drywell temperature has exceeded the Enclosure 20 temperature limit?

A. Excessive strain on primary system components in the drywell due to heatup and rapid cooldown.

B. Pipe damage due to voiding and subsequent water hammer.

C. Excessive heat load on the Service Water System.

D. Service Water Pumps operating in runout condition.

Proposed Answer: B.

Explanation:
A. See “B”.
B. Correct: A caution exists in Enclosure 20 to prevent opening the service water valves to the drywell if 200°F has been exceeded. Above this temperature, the potential for boiling in the pipe exists which can cause relief valves to open leaving void sections in the piping. If these valves are subsequently opened, these voided sections can resulted in water hammer/pipe damage.
C. See “B”.
D. See “B”.

Technical Reference(s): EOP-0005 Enclosure 20

Proposed references to be provided to applicants during examination: NA

Learning Objective: RLP-HLO-516 Obj 1

Question Source: New

Question History: Last NRC Exam NA

Cognitive Level: Memory or Fundamental Knowledge ☑3 Comprehension or Analysis ☐

10 CFR Part 55 Content: 55.41.b10

Comments:

QUESTION 26 Rev 0

Examination Outline Cross-Reference:	Level		RO ☑	SRO ☐
	Tier #	1	Group #	2
	K/A #	295032 EK1.01		IR 3.6

Knowledge of the operational applications of personnel protection as it applies to high secondary containment area temperature.

Proposed Question:

Which of the following areas are assigned a Maximum Normal Operating Temperature above which personnel access may not be possible and EOP-0003, Secondary Containment and Radioactivity Release Control, entry required?

A. Main Steam Tunnel

B. Reactor Water Cleanup (RWCU) Heat Exchanger Room

C. Low Pressure Core Spray (LPCS) Pump Room

D. High Pressure Core Spray (HPCS) Pump Room

Proposed Answer: A.

Explanation:
A. Correct - The Maximum Normal Operating Temperature for the steam tunnel is 135°F. Above this temp requires entry into EOP-0003.
B. High temp in the RWCU Pump Room requires EOP-0003 entry, not the heat exchanger room.
C. The RHR A, B & RCIC Rooms require EOP-0003 entry, but not LPCS and HPCS.
D. The RHR A, B & RCIC Rooms require EOP-0003 entry, but not LPCS and HPCS.

Technical Reference(s): EOP-0003

Proposed references to be provided to applicants during examination: NA

Learning Objective: RLP-HLO-515 Obj 2

Question Source: New

Question History: Last NRC Exam NA

Cognitive Level: Memory or Fundamental Knowledge ☑2 Comprehension or Analysis ☐

10 CFR Part 55 Content: 55.41.b10

Comments:

QUESTION 27 Rev 0

Examination Outline Cross-Reference:	Level		RO ☑	SRO ☐
	Tier #	1	Group #	2
	K/A #	295034 G.2.4.46	IR 4.2	

Ability to verify that the alarms are consistent with the plant conditions regarding secondary containment ventilation high radiation.

Proposed Question:

The following indications are observed at the DRMS Computer CRT:

- 1GP112 DRYWELL ATMOS GREEN
- 1GP111 CONT ATMOS GREEN
- 1GP110 AUX BLDG VENT RED
- 1GP118 TB VENT GREEN

The above indications are indicative of a leak causing elevated radiation levels in which of the following areas?

A. Drywell

B. Primary containment

C. Secondary containment

D. Outside primary and secondary containment

Proposed Answer: C.

Explanation:
A. Drywell rad levels are normal as indicated by RMS-RE112 being in GREEN status.
B. Primary containment rad levels are normal as indicated by RMS-RE111 being in GREEN status.
C. Correct – RMS-RE110 being in RED status indicates that elevated radiation conditions exist in the Auxiliary Bldg which is part of Secondary Containment.
D. Of the given indications, only RMS-RE118 is outside primary and secondary containment. Its rad levels are normal as indicated by GREEN status.

Technical Reference(s): ARP-RMS-DSPL230

Proposed references to be provided to applicants during examination: NA

Learning Objective: RLP-STM-0511 Obj 7, RLP-STM-0409 Obj 7

Question Source: New

Question History: Last NRC Exam NA

Cognitive Level: Memory or Fundamental Knowledge ☐ Comprehension or Analysis ☑2

10 CFR Part 55 Content: 55.41.b10 Comments:

QUESTION 28 Rev 0

Examination Outline Cross-Reference:	Level		RO ☑ SRO ☐
	Tier #	2	Group # 1
	K/A #	203000 K4.14	IR 3.6

Knowledge of RHR/LPCI: Injection Mode design feature(s) and or interlock(s) which provide for operation from remote shutdown panels.

Proposed Question:

Due to a fire in the Main Control Room, control was established at the remote shutdown panel.

RCIC is in service for level control.
RHR ‘A’ is in suppression pool cooling mode.

Subsequently, a LOCA resulted in a drywell pressure initiation signal.
Reactor Pressure is 320 psig

Which of the following describes the status of RHR ‘A?

- E12-MOVF042A RHR PUMP A LPCI INJECT ISOL VALVE
- E12-MOVF024A RHR PUMP A TEST RTN TO SUP PL

	E12-MOVF042A	E12-MOVF024A
A.	CLOSED	CLOSED
B.	OPEN	CLOSED
C.	CLOSED	OPEN
D.	OPEN	OPEN

Proposed Answer: C.

Explanation:
A. The LOCA initiation signals to the listed components are bypassed when control is transfer to RSS, therefore E12-MOVF042 will not open to inject into the RPV and E12-MOVF024A will not close as it normally would. RHR ‘A’ will remain in the SP Pool Cooling lineup.
B. See “A”.
C. Correct-See “A”.
D. See “A”.

Technical Reference(s): R-STM-0200

Proposed references to be provided to applicants during examination: NA

Learning Objective: RLP-STM-0200 Obj 8

Question Source: New

Question History: Last NRC Exam NA

Cognitive Level: Memory or Fundamental Knowledge ☐ Comprehension or Analysis ☑3

10 CFR Part 55 Content: 55.41.b7 Comments:

QUESTION 29 Rev 0

Examination Outline Cross-Reference:	Level		RO ☑	SRO ☐
	Tier #	2	Group #	1
	K/A #	203000 A1.09		IR 2.9

Ability to predict and/or monitor changes in parameters associated with operating RHR/LPCS: Injection Mode controls including component cooling water systems.

Proposed Question:

During surveillance testing, CCP-MOV16A, RPCCW LOOP A SUPPLY has been isolated and can not be restored.

The above condition may result in rising temperature in which of the following components?

A. RWCU Non-Regenerative Heat Exchanger outlet

B. RWCU Pump bearings

C. Reactor Recirculation Pump motor bearings

D. Residual Heat Removal pump seals

Proposed Answer: D.

Explanation:
A. Closure of CCP-MOV16A results in loss of cooling to the safety related loop of CCP. The RWCU NRHX is not supplied by the safety related loop of CCP cooling.
B. Closure of CCP-MOV16A results in loss of cooling to the safety related loop of CCP. The RWCU Pumps are not supplied by the safety related loop of CCP cooling.
C. Closure of CCP-MOV16A results in loss of cooling to the safety related loop of CCP. The Recric pump motor bearings not supplied by the safety related loop of CCP cooling.
D. Correct – The RHR pump seal coolers lose cooling when the safety loop of CCP is isolated.

Technical Reference(s): R-STM-0115

Proposed references to be provided to applicants during examination: NA

Learning Objective: RLP-STM-0115 Obj 9

Question Source: New

Question History: Last NRC Exam NA

Cognitive Level: Memory or Fundamental Knowledge ☐ Comprehension or Analysis ☑2

10 CFR Part 55 Content: 55.41.b5

Comments:

QUESTION 30 Rev 0

Examination Outline Cross-Reference:	Level		RO ☑	SRO ☐
	Tier #	2	Group #	1
	K/A #	205000 K1.15		IR 3.5

Knowledge of the physical connections and/or cause-effect relationships between shutdown cooling and RHR service water.

Proposed Question:

The plant is in Mode 4 following shutdown to begin a refueling outage.

- RHR ‘A’ is in the shutdown cooling lineup with a flowrate of 3000 gpm.
- RPV temperature is 175°F.
- SWP flow to RHR Heat Exchanger A is 5800 gpm

Which of the following valves can be throttled open/closed to further cooldown the RPV?

- E12-MOVF068A, RHR HX A SVCE WTR RTN
- E12-MOVF048A, RHR HX A BYPASS VALVE

A. Open E12-MOVF068A

B. Close E12-MOVF068A

C. Open E12-MOVF048A

D. Close E12-MOVF048A

Proposed Answer: D.

Explanation:
A. Although opening E12-MOVF068A would result in further cooldown, SWP flow is already at the maximum allowed flow rate of 5800 gpm.
B. Closing E12-MOVF068A would result in less heat removal so RPV temp would rise.
C. Opening E12-MOVF048A would result in more flow bypassing the heat exchanger therefore less heat removal. RPV temp would rise.
D. Throttling closed on E12-MOVF048A would force more flow through the heat exchanger and more overall heat removal.

Technical Reference(s): R-STM-0204

Proposed references to be provided to applicants during examination: NA

Learning Objective: RLP-STM-0204 Obj 2, 8, 10

Question Source: New

Question History: Last NRC Exam NA

Cognitive Level: Memory or Fundamental Knowledge ☐ Comprehension or Analysis ☑3

10 CFR Part 55 Content: 55.41.b4

Comments:

QUESTION 31 Rev 0

Examination Outline Cross-Reference:	Level		RO ☑ SRO ☐
	Tier #	2	Group # 1
	K/A #	209001 A3.06	IR 3.6

Ability to monitor automatic operations of LPCS including lights and alarms.

Proposed Question:

Low Pressure Core Spray (LPCS) is running in the Test Return to the suppression pool lineup for surveillance testing.

During the test, the following alarms are received due to a valid condition.

DIV 1 LPCS INIT DRYWELL PRESSURE HIGH
LPCS/LPCI A INJ VALVE RPV PRESS LOW

Which of the following represents the current status of LPCS?

- E21-MOVF005, LPCS INJECT ISOL VALVE
- E21-MOVF012, LPCS TEST RETURN VLV TO SUPPRESSION POOL

	E21-MOVF005	E21-MOVF012
A.	CLOSED	CLOSED
B.	OPEN	OPEN
C.	CLOSED	OPEN
D.	OPEN	CLOSED

Proposed Answer: D.

Explanation:
A. E21-MOVF005 is not closed because and initiation signal is present and the low pressure permissive to open is met based on given annunciators. E21-MOVF012 is closed however, due to the initiation signal.
B. E21-MOVF005 is open (See “A”), but E21-MOVF012 in not open due to the initiation signal.
C. E21-MOVF005 is not closed (See “A”) and E21-MOVF012 in not open due to the initiation signal.
D. Correct-E21-MOVF005 is open due to the initiation signal and pressure permissive being met. E21-MOVF012 is closed due to the initiation signal to allow all flow to the RPV.

Technical Reference(s): R-STM-0205

Proposed references to be provided to applicants during examination: NA

Learning Objective: RLP-STM-0205 4, 7, 9

Question Source: New

Question History: Last NRC Exam NA

Cognitive Level: Memory or Fundamental Knowledge ☐ Comprehension or Analysis ☑2

10 CFR Part 55 Content: 55.41.b7

Comments:

QUESTION 32 Rev 0

Examination Outline Cross-Reference: Level RO ☑ SRO ☐
Tier # 2 Group # 1
K/A # 209002 G.2.2.22 IR 4.0

Knowledge of limiting conditions for operations and safety limits regarding HPCS.

Proposed Question:

With the plant in Mode 3, the High Pressure Core Spray System has been declared inoperable due to a failure in the pump breaker which prevents the breaker from closing when required.

Which of the following is the appropriate Technical Specification for this condition?

A. 3.8.1. AC SOURCES-OPERATING

B. 3.8.2. AC SOURCES-SHUTDOWN

C. 3.5.1 ECCS-OPERATING

D. 3.5.2. ECCS-SHUTDOWN

Proposed Answer: C.

Explanation:
A. Even though the problem is breaker related, the AC Sources – Operating Spec deals with Offsite power sources and the diesel generators, not individual component breakers.
B. Even though the problem is breaker related, the AC Sources – Shutdown Spec deals with Offsite power sources and the diesel generators required during Shutdown conditions, not individual component breakers.
C. Correct – ECCS is the appropriate spec for HPCS. Additionally, the ECCS Operating spec is applicable to Modes 1, 2, and 3. As stated in the stem, the plant is in Mode 3.
D. Although ECCS spec is applicable, the ECCS-Shutdown spec is applicable to Modes 4 and 5. In the stem it is stated that the plant is in Mode 5.

Technical Reference(s): Technical Specification 3.5.1

Proposed references to be provided to applicants during examination: NA

Learning Objective: RLP-STM-0203 Obj 14

Question Source: New

Question History: Last NRC Exam NA

Cognitive Level: Memory or Fundamental Knowledge ☐ Comprehension or Analysis ☑3

10 CFR Part 55 Content: 55.41.b5

Comments:

QUESTION 33 Rev 0

Examination Outline Cross-Reference:	Level		RO ☑	SRO ☐
	Tier #	2	Group #	1
	K/A #	211000 A4.04		IR 4.5

Ability to manually operate and/or monitor reactor power in the control room regarding SLC.

Proposed Question:

An ATWS has occurred. The Standby Liquid Control System (SLC) has been initiated and has been injecting into the vessel for 3 minutes. The following conditions exist:

- Suppression Pool Temp 107°F
- Sup Pool Level 20 feet 2 inches
- Reactor Pressure 870 psig steady
- Reactor Level -65 inches
- 3 SRVs are OPEN

Which of the following describes expected observations during SLC injection?

A. APRM Downscale lights extinguish.

B. IRM Down range lights illuminate

C. IRM Up range lights illuminate.

D. An additional SRV has opened to control pressure.

Proposed Answer: B.

Explanation:
A. As SLC is injected, power will lower. APRM downscale lights will illuminate.
B. Correct - As SLC is injected, power will lower. IRM Down range lights will illuminate as power lowers to 15/125 of the selected range indicating that the next lower range should be selected.
C. As SLC is injected, power will lower. IRM Up range lights will extinguish as power lowers below 75/125 of the selected range indicating.
D. As SLC is injected, power will lower. If an additional SRV is required to maintain pressure, power is rising.

Technical Reference(s): R-STM-0503, R-STM-0109

Proposed references to be provided to applicants during examination: NA

Learning Objective: RLP-STM-0503 Obj 9

Question Source: New

Question History: Last NRC Exam NA

Cognitive Level: Memory or Fundamental Knowledge ☐ Comprehension or Analysis ☑2

10 CFR Part 55 Content: 55.41.b7

Comments:

QUESTION 34 Rev 0

Examination Outline Cross-Reference:	Level		RO ☑	SRO ☐
	Tier #	2	Group #	1
	K/A #	211000 G.2.4.6	IR 3.7	

Knowledge of EOP mitigation strategies regarding SLC.

Proposed Question:

The plant has experienced an ATWS.
RPV water level band is -60" to -140" as directed by EOP-001A RPV Control, ATWS.
Standby Liquid Control is injecting.

(1) When can water level be intentionally raised above this band, and
(2) To what level can it be raised and why?

A. (1) When 69 pounds of boron have been injected.
(2) To no higher than 10 inches to prevent boron dilution.

B. (1) When 141 pounds of boron have been injected.
(2) To no higher than 10 inches to prevent boron dilution.

C. (1) When 69 pounds of boron have been injected.
(2) To 10 to 51 inches to promote boron mixing.

D. (1) When 141 pounds of boron have been injected.
(2) To 10 to 51 inches to promote boron mixing.

Proposed Answer: C.

Explanation:
A. Cold Shutdown Wt is calculated with the assumption that water level is 51", so boron dilution is not a concern.
B. Changes in level are based on Cold Shutdown Boron Wt (141 lbs) not Hot Shutdown Wt (69 lbs), also Cold Shutdown Wt is calculated with the assumption that water level is 51", so boron dilution is not a concern.
C. Correct-Once Cold Shutdown Boron Wt has been injected level is raise to 10-51 inches to promote boron mixing.
D. Changes in level are based on Cold Shutdown Boron Wt (141 lbs) not Hot Shutdown Wt (69 lbs)

Technical Reference(s): EOP-001A

Proposed references to be provided to applicants during examination: NA

Learning Objective: RLP-OPS-HLO-513 Obj 5

Question Source: New

Question History: Last NRC Exam NA

Cognitive Level: Memory or Fundamental Knowledge ☑3 Comprehension or Analysis ☐

10 CFR Part 55 Content: 55.41.b10 Comments:

QUESTION 35 Rev 0

Examination Outline Cross-Reference:	Level	RO ☑	SRO ☐
	Tier # 2	Group #	1
	K/A # 212000 A4.06		IR 4.2

Ability to manually operate and/or monitor control rod position in the control room.

Proposed Question:

Which of the following is the expected control rod position indication on H13-P680 following a successful reactor scram prior to the scram being reset?

Assume RC&IS is in RAW DATA mode.

A. Green Full in lights lit, Rod positions indicate 00

B. Green Full in lights lit, Rod position indications are Blank

C. Green Full in lights extinguished, Rod positions indicate 00

D. Green Full in lights extinguished, Rod position indications are Blank

Proposed Answer: B.

Explanation:
A. Green Full in light will be lit, but rod position will be Blank since RAW DATA is selected and the control rods are beyond full in since the scram has not been reset.
B. Correct – With no pushbuttons depressed, the green full in LEDs will be lit. With RAW DATA selected, the rod position will be blank because the rods are beyond full in since the scrams has not been reset. If RAW DATA were not selected, the rod position would be 00.
C. PIP reed switch 52 closes when the control rod is beyond full in causing the Green light to be lit when beyond full in. This switch does not affect actual position indication, so this field will be Blank.
D. See “C”.

Technical Reference(s): R-STM-0052, R-STM-0500

Proposed references to be provided to applicants during examination: NA

Learning Objective: RLP-STM-0052 Obj 6, 8, 15; RLP-STM-0500 Obj 7, 20

Question Source: New

Question History: Last NRC Exam NA

Cognitive Level: Memory or Fundamental Knowledge ☐ Comprehension or Analysis ☑3

10 CFR Part 55 Content: 55.41.b7

Comments:

QUESTION 36 Rev 0

Examination Outline Cross-Reference:	Level		RO ☑	SRO ☐
	Tier #	2	Group #	1
	K/A #	215003 K6.05		IR 3.1

Knowledge of the effect that a loss or malfunction of trip units will have on IRMs.

Proposed Question:

The plant is in Mode 2 performing a reactor startup. The “High” trip unit (Reference value 108/125) for IRM ‘D’ has failed to its tripped condition.

What is the result of this failure?

A. ½ scram and RC&IS rod block

B. ½ scram signal only

C. RC&IS rod block only

D. No actuation

Proposed Answer: C.

Explanation
A. The failed trip unit only provides an output signal to RC&IS. No ½ scram will occur.
B. See “A”.
C. Correct-The failed trip unit provides a signal to RC&IS to generate a rod block.
D. With the plant in Mode 2, the mode switch is in STARTUP/HOT STANDBY position. In this position, IRM rod block actuations are active.

Technical Reference(s): R-STM-0503

Proposed references to be provided to applicants during examination: NA

Learning Objective: RLP-STM-0503 Obj 37

Question Source: New

Question History: Last NRC Exam NA

Cognitive Level: Memory or Fundamental Knowledge ☐ Comprehension or Analysis ☑2

10 CFR Part 55 Content: 55.41.b7

Comments:

QUESTION 37 Rev 0

Examination Outline Cross-Reference:	Level	RO ☑	SRO ☐
	Tier # 2	Group #	1
	K/A # 215004 K4.01		IR 3.7

Knowledge of Source Range Monitor design feature(s) and or interlock(s) which provide for rod withdrawal blocks.

Proposed Question:

The following plant conditions exist:

- Reactor Mode Switch is in START UP/HOT STANDBY
- All SRMs are partially withdrawn
- All Intermediate Range Monitors (IRMs) are on Range 3
- Source Range Monitor (SRM) A is reading 5 cps
- SRMs B and C are reading 8.3×10^4 cps
- SRM D mode switch is in STANDBY

Which of the following has caused a Control Rod Withdrawal Block?

A. SRM Upscale

B. SRM Downscale

C. SRM Detector Retract Permit

D. SRM Inoperable

Proposed Answer: D.

Explanation:
A. The setpoint for SRM Upscale is 1×10^5 cps. No SRM indicates above this value.
B. SRM Downscale setpoint is 3 cps. No SRM indicates below this value.
C. SRM Detector Wrong Position initiates a rod block at <100 cps if the detector is not fully inserted, but is bypassed if the associated IRM is on Range 3 or above. The only SRM below 100 cps is SRM A and its associated IRMs (A & E) are both on Range 3, so this signal is bypassed.
D. Correct-SRM D mode switch is not in operate and is not bypassed. This signal is bypassed when the associated IRMs (D & H) are on Range 8 or above. Therefore SRM D is generating a control rod withdrawal block.

Technical Reference(s): SOP-0074, R-STM-0503

Proposed references to be provided to applicants during examination: NA

Learning Objective: RLP-STM-0503 Obj 4

Question Source: Bank # RBS-NRC-1127

Question History: Last NRC Exam NA

Cognitive Level: Memory or Fundamental Knowledge ☐ Comprehension or Analysis ☑3

10 CFR Part 55 Content: 55.41.b7

Comments:

QUESTION 38 Rev 0

Examination Outline Cross-Reference:	Level		RO ☑	SRO ☐
	Tier #	2	Group #	1
	K/A #	215005 K6.01		IR 3.7

Knowledge of the effect that a loss or malfunction of RPS will have on APRM/LPRMs.

Proposed Question:

With the plant operating at 100%, a loss of RPS bus A occurred.

Which of the following describes the effect on the associated APRMs?

A. H13-P680 APRM indication on the associated APRMs is unavailable until RPS A is transferred to ALTERNATE.

B. H13-P680 APRM indication on the associated APRMs is unavailable until the associated neutron cabinet power supplies are reset after power is transferred to ALTERNATE.

C. Control room back panel APRM indication on the associated APRMs is available, but the H13-P680 APRM recorders are unavailable until RPS A is transferred to ALTERNATE.

D. Control room back panel APRM indication on the associated APRMs is available, but the H13-P680 recorders are unavailable until the associated neutron cabinet power supplies are reset after power is transferred to ALTERNATE.

Proposed Answer: B.

Explanation
A. Simply transferring RPS to an alternate power source will not restore power to the APRM detectors. The individual cabinet power supplies must be reset after power is restored to the RPS bus.
B. Correct – Resetting the neutron cabinet power supplies after power is restored to RPS will restore power to the APRMs.
C. Back panel reading are not available until power is restored to the detectors..
D. Back panel reading are not available until power is restored to the detectors..

Technical Reference(s): R-STM-0503

Proposed references to be provided to applicants during examination: NA

Learning Objective: RLP-STM-0503 Obj 39

Question Source: New

Question History: Last NRC Exam NA

Cognitive Level: Memory or Fundamental Knowledge ☐ Comprehension or Analysis ☑3

10 CFR Part 55 Content: 55.41.b7 Comments:

QUESTION 39 Rev 0

Examination Outline Cross-Reference:	Level		RO ☑	SRO ☐
	Tier #	2	Group #	1
	K/A #	217000 A3.02		IR 3.6

Ability to monitor automatic operations of RCIC including turbine startup.

Proposed Question:

A plant transient has resulted in the need to initiate Reactor Core Isolation Cooling (RCIC).

Once the system has been initiated, the opening of ______(1)_______ initiates the ramp function to the RCIC speed controller. The operator should then observe the ramp up of turbine speed over a period of approximately ______(2)________.

A. E51-MOVF013, RCIC INJECT ISOL VALVE; (2) 12 seconds

B. E51-MOVF013, RCIC INJECT ISOL VALVE; (2) 32 seconds

C. E51-MOVF045, RCIC STEAM SUPPLY TURBINE STOP VALVE; (2) 12 seconds

D. E51-MOVF045, RCIC STEAM SUPPLY TURBINE STOP VALVE; (2) 32 seconds

Proposed Answer: C.

Explanation:
A. The ramp generator is initiated by E51-F045.
B. The ramp generator is initiated by E51-F045 and the ramp time is 12 seconds.
C. Correct- The ramp generator is initiated by E51-F045 and the ramp time is 12 seconds.
D. The ramp time is 12 seconds.

Technical Reference(s): R-STM-0209

Proposed references to be provided to applicants during examination: NA

Learning Objective: RLP-STM-0209 Obj 4, 9

Question Source: New

Question History: Last NRC Exam NA

Cognitive Level: Memory or Fundamental Knowledge ☑3 Comprehension or Analysis ☐

10 CFR Part 55 Content: 55.41.b7

Comments:

QUESTION 40 Rev 0

Examination Outline Cross-Reference:	Level		RO ☑	SRO ☐
	Tier #	2	Group #	1
	K/A #	218000 K5.01		IR 3.8

Knowledge of the operational implications of ADS logic operation as it applies to ADS.

Proposed Question:

Following a plant transient, the following conditions exist:

- RPV Level -155 inches, slowly rising
- RPV Pressure 220 psig, lowering
- ADS actuation has occurred

If the operator places the control switch on H13-P601 for B21-F051C ADS SRV to OFF, how will the valve respond?

The SRV will…

A. …close and remain closed.

B. …remain open until RPV Level rises above Level 1.

C. …remain open until the ADS logic is reset.

D. …close and will only operate in the Safety mode.

Proposed Answer: C.

Explanation:
A. –Actuation on ADS is independent of control switch position since the ADS contacts bypass the control switch.
B. Actuation on ADS is independent of control switch position since the ADS contacts bypass the control switch. This is a plausible distractor because ADS logic level signals do not seal in.
C. Correct The valve will remain open because the ADS contacts bypass the control switch in the circuitry. The only method of closing the ADS valves once ADS actuation has occurred is to depress the Level 3 Seal-In Reset Pushbutton..
D. Actuation on ADS is independent of control switch position since the ADS contacts bypass the control switch.

Technical Reference(s): R-STM-0202

Proposed references to be provided to applicants during examination:NA

Learning Objective: RLP-STM-0202 Obj 7

Question Source: New

Question History: Last NRC Exam NA

Cognitive Level: Memory or Fundamental Knowledge ☐ Comprehension or Analysis ☑3

10 CFR Part 55 Content: 55.41.b5 Comments:

QUESTION 41 Rev 0

Examination Outline Cross-Reference:	Level		RO ☑	SRO ☐
	Tier #	2	Group #	1
	K/A #	223002 K6.06		IR 2.8

Knowledge of the effect that a loss or malfunction of various process information will have on Nuclear Steam Supply Shutoff.

Proposed Question:

A downscale failure has occurred on E31-N604C, MSL Tunnel Temperature trip unit.

How does this failure affect the isolation capability of the Main Steam Isolation Valves if a valid high temperature condition were to occur?

A. MSIV isolation would <u>NOT</u> occur.

B. Only the Outboard MSIVs will isolate.

C. Only the Inboard MSIVs will isolate.

D. All MSIVs will isolate.

Proposed Answer: D.

Explanation:
A. The one out of two twice logic arrangement prevents a single failure from either causing or preventing and isolation.
B. See "A" & "D".
C. See "A" & "D".
D. With channels A, B, and D still available, the MSIVs would still isolate on a valid condition. The one out of two, twice logic setups results in an isolation if A or C and B or D channels sensed a valid high temp condition.

Technical Reference(s): R-STM-0058

Proposed references to be provided to applicants during examination: NA

Learning Objective: RLP-STM-0058 Obj 10, 11

Question Source: New

Question History: Last NRC Exam NA

Cognitive Level: Memory or Fundamental Knowledge ☐ Comprehension or Analysis ☑3

10 CFR Part 55 Content: 55.41.b7

Comments:

QUESTION 42 Rev 0

Examination Outline Cross-Reference:	Level		RO ☑	SRO ☐
	Tier #	2	Group #	1
	K/A #	239002 G.2.4.31	IR 4.2	

Knowledge of annunciator alarms, indications, or response procedures for SRVs.

Proposed Question:

Following a LOCA, the following alarm status is observed at H13-P601

• DIV 1 LOW RX LVL LEVEL 3 ADS CONFIRMATION	Alarmed
• DIV 1 ADS LOGIC CHANNEL A SEALED IN	Extinguished
• DIV 1 ADS LOGIC CHANNEL E SEALED IN	Alarmed

Which of the following describes the status of the Division 1 SRV solenoids?

The Division 1 SRV solenoids…

A. are energized.

B. will energize when the 105 second timer times out.

C. will energize when the 5 minute timer times out.

D. will energize when the 5 minute timer and 105 second timer time out, sequentially.

Proposed Answer: B.

Explanation:
A. The Channel A logic is not yet energized therefore the solenoids are not energized.
B. Correct-The only difference between the A & E channels are the Conf Level 3 and the 105 sec TD. The Conf Level signal is met based on the 1st annunciator listed, so once the timer expires, the solenoids will be energized.
C. The 5 minutes timer bypasses the Hi Drywell pressure requirement for ADS if Level 1 is experienced for 5 minutes. Since the Ch E is already seal-in, either the timer has already timed out or an actual Hi Drywell pressure condition occurred. Actuating the Ch A logic is independent of the 5 minute timer in this condition.
D.See “C”.

Technical Reference(s): R-STM-0202

Proposed references to be provided to applicants during examination: NA

Learning Objective: RLP-STM-0202 Obj 5, 7

Question Source: New

Question History: Last NRC Exam NA

Cognitive Level: Memory or Fundamental Knowledge ☐ Comprehension or Analysis ☑3

10 CFR Part 55 Content: 55.41.b10

Comments:

QUESTION 43 Rev 0

Examination Outline Cross-Reference:	Level	RO ☑	SRO ☐
	Tier # 2	Group #	1
	K/A # 259002 K3.02		IR 3.7

Knowledge of the effect that a loss or malfunction of the reactor water level control will have on reactor feedwater system.

Proposed Question:

A plant startup is in progress with the Reactor Mode Switch in STARTUP/HOT STANDBY.

Reactor power is 7% just prior to placing the Mode Switch in RUN when the Startup Feedwater Regulating Valve fails fully open.

Which of the following will occur as a result of this failure?

A. Reactor scrams on high water level.

B. Reactor feedwater pumps trip on high water level.

C. Reactor water level remains unchanged due to compensation by the CNM-FV104, STARTUP RECIRC FLOW CONTROL VALVE.

D. Reactor water level stabilizes at a new higher level.

Proposed Answer: B.

Explanation:
A. Level 8 scram is only active with the mode switch in RUN.
B. Correct-Level will continue to rise and the FWS pumps will trip on Level 8.
C. CNM-FV104 does not have a level input signal.
D. Level would only stabilize if something acted to close the valve. The stem indicates that the valve fails full open.

Technical Reference(s): R-STM-0107

Proposed references to be provided to applicants during examination: NA

Learning Objective: RLP-STM-0107 Obj 5

Question Source: Bank # RBS-NRC-348

Question History: Last NRC Exam RBS 1997

Cognitive Level: Memory or Fundamental Knowledge ☐ Comprehension or Analysis ☑3

10 CFR Part 55 Content: 55.41.b7

Comments:

QUESTION 44 Rev 0

Examination Outline Cross-Reference:	Level		RO ☑	SRO ☐
	Tier #	2	Group #	1
	K/A #	259002 A1.01		IR 3.8

Ability to predict and/or monitor changes in parameters associated with operating reactor water level controls including reactor water level.

Proposed Question:

A localized loss of instrument air has resulted in all 3 Feedwater Regulating Valves locking up.

If the ATC operator depresses the “A” FW Regulating Valve Control Signal Failure Reset pushbutton prior to air being restored, what will be the effect on Reactor Water Level?

Reactor water level…

A. rises as the “A” Feedwater Regulating Valve fully opens.

B. lowers as the “A” Feedwater Regulating Valve fully closes.

C. remains unchanged as “B” & “C” valves compensate as “A” fully opens.

D. remains unchanged as “B” & “C” valves compensate as “A” fully closes.

Proposed Answer: A.

Explanation:
A. Correct – If the lockup is reset with no air available, the “A” valve will fail full open. “B” &”C” are locked up so they can not compensate. The valve would fail closed if the lockup was due to loss of DC control signal.
B. See “A”.
C. See “A”.
D. See “A”.

Technical Reference(s): R-STM-0107

Proposed references to be provided to applicants during examination: NA

Learning Objective: RLP-STM-0107B Obj 10, 13, 15, 16

Question Source: New

Question History: Last NRC Exam NA

Cognitive Level: Memory or Fundamental Knowledge ☐ Comprehension or Analysis ☑3

10 CFR Part 55 Content: 55.41.b5

Comments:

QUESTION 45 Rev 0

Examination Outline Cross-Reference:	Level		RO ☑	SRO ☐
	Tier #	2	Group #	1
	K/A #	261000 K3.02		IR 3.6

Knowledge of the effect that a loss or malfunction of the SGTS will have off-site release rates.

Proposed Question:

A primary system is leaking into the Reactor Water Cleanup Pump Room.

Standby Gas Treatment has been manually initiated, but both trains have failed to start.

Which of the following indications would be expected under these conditions?

A. High containment pressure

B. Negative auxiliary building pressure

C. Negative annulus pressure

D. Elevated off-site radiation levels

Proposed Answer: D.

Explanation:
A. On a LOCA signal, GTS takes suction on the Aux Bldg and Annulus, not the containment. With containment pressure being referenced to the auxiliary building, a negative pressure in the auxiliary bldg will indicate a higher containment pressure.
B. This is the expected indication for GTS operation.
C. This is the expected indication for GTS operation.
D. Correct – GTS is provided to reduce via filtration and adsorption the radioactive material released to the environment, therefore a malfunction of GTS may result in elevated rad levels. Additionally, not maintaining negative pressures in the annulus and auxiliary building could allow some leakage to bypass the filteration and adsorption process.

Technical Reference(s): R-STM-0257

Proposed references to be provided to applicants during examination: NA

Learning Objective: RLP-STM-0257 Obj 11

Question Source: New

Question History: Last NRC Exam NA

Cognitive Level: Memory or Fundamental Knowledge ☐ Comprehension or Analysis ☑2

10 CFR Part 55 Content: 55.41.b7

Comments:

QUESTION 46 Rev 0

Examination Outline Cross-Reference:	Level		RO ☑	SRO ☐
	Tier #	2	Group #	1
	K/A #	262001 A3.04		IR 3.4

Ability to monitor automatic operations of AC Electrical Distribution including load sequencing.

Proposed Question:

A loss of offsite power (LOP) has occurred coincident with a loss of coolant accident (LOCA). The Division 1 diesel generator has started and has re-energized ENS-SWG1A.

Which of the following represents the correct order for the sequencing of loads onto ENS-SWG1A?

A. RHR ‘A’, LPCS, SWP-P2A, HVR-UC1A

B. LPCS, RHR ‘A’, SWP-P2A, HVR-UC1A

C. LPCS, RHR ‘A’, HVR-UC1A, SWP-P2A

D. RHR ‘A’, LPCS, HVR-UC1A, SWP-P2A

Proposed Answer: B.

Explanation:
A. See “B”.
B. The following times are referenced to output breaker closure. LPCS 2 seconds, RHR ‘A’ 7 seconds, SWP-P2A 60 seconds, HVR-UC1A 600 seconds.
C. See “B”
D. See “B”

Technical Reference(s): AOP-0004

Proposed references to be provided to applicants during examination: NA

Learning Objective: RLP-STM-0300 Obj 6

Question Source: New

Question History: Last NRC Exam NA

Cognitive Level: Memory or Fundamental Knowledge ☑2 Comprehension or Analysis ☐

10 CFR Part 55 Content: 55.41.b7

Comments:

QUESTION 47 Rev 0

Examination Outline Cross-Reference:	Level	RO ☑	SRO ☐
	Tier # 2	Group #	1
	K/A # 262002 K4.01		IR 3.1

Knowledge of UPS (AC/DC) design feature(s) and or interlock(s) which provide for transferring from preferred power to alternate power supplies.

Proposed Question:

Uninterruptible Power Supply ENB-INV01A is in its normal lineup when a malfunction of the rectifier occurs that results in its output voltage to be 0 volts.

What is the expected response of uninterruptible power supply?

A. The UPS will continue to supply bus loads using the station battery as a DC source to the inverter.

B. The UPS will continue to supply bus loads since the rectifier only provides power with the UPS in BYPASS mode.

C. The UPS static transfer switch will transfer and continue to supply bus loads via the alternate power supply.

D. The UPS will <u>NOT</u> supply bus loads due to a LOSS OF SYNCH condition preventing transfer to the alternate power supply.

Proposed Answer: A.

Explanation:
A. Correct – During normal operation, the output of the rectifier is at a slightly higher voltage than the batteries. When the rectifier output drops below battery voltage, the batteries will begin supplying the DC source to the inverter.
B. The rectifier is not in the BYPASS lineup. Is in the normal lineup and is backed up by the batteries.
C. The static switch will only transfer on a loss of voltage from the output of the inverter. The station batteries will supply the inverter when the rectifier is loss, so no transfer occurs.
D. The UPS <u>will continue to supply the bus with the batteries supplying the inverter.</u>

Technical Reference(s): R-STM-300

Proposed references to be provided to applicants during examination: NA

Learning Objective: RLP-STM-300 Obj 15

Question Source: Modified Bank # RBS 2008 NRC #48

Question History: Last NRC Exam NA

Cognitive Level: Memory or Fundamental Knowledge ☐ Comprehension or Analysis ☑3

10 CFR Part 55 Content: 55.41.b7

Comments:

QUESTION 48 Rev 0

Examination Outline Cross-Reference:	Level		RO ☑	SRO ☐
	Tier #	2	Group #	1
	K/A #	263000 K2.01		IR 3.1

Knowledge of the electrical power supplies to major DC loads.

Proposed Question:

The power supply to E51-MOVF013, RCIC INJ SHUTOFF VLV is ____________.

A. ENB-MCC1

B. ENB-SWG1B

C. ENB-CHGR1B

D. ENB-PNL02A

Proposed Answer: A.

Explanation
A. Correct
B. Incorrect bus.
C. Incorrect bus.
D. Incorrect bus.

Technical Reference(s): SOP-0035

Proposed references to be provided to applicants during examination: NA

Learning Objective: RLP-STM-0209 Obj 13

Question Source: New

Question History: Last NRC Exam NA

Cognitive Level: Memory or Fundamental Knowledge ☑2 Comprehension or Analysis ☐

10 CFR Part 55 Content: 55.41.b7

Comments:

QUESTION 49 Rev 0

Examination Outline Cross-Reference:	Level		RO ☑	SRO ☐
	Tier #	2	Group #	1
	K/A #	263000 K6.01		IR 3.2

Knowledge of the effect that a loss or malfunction of AC electrical distribution will have on DC electrical distribution.

Proposed Question:

A loss of all AC power onsite has occurred and restoration is estimated to take at least 12 hours.

Which of the following describes the effect on DC distribution?

A. No effect. DC loads will continue to be supplied by station batteries until AC power is restored.

B. ENB loads will continue to be supplied for 8 hours, and then a loss of DC will occur.

C. BYS loads will continue to be supplied for 4 hours, and then a loss of DC will occur.

D. ENB loads can be supplied for the duration of the AC outage if the Station Blackout Diesel is used to recharge station batteries.

Proposed Answer: D.

Explanation:
A. With no AC, the individual battery chargers will no longer supply the bus. The batteries will begin to supply the loads but will eventually be depleted.
B. ENB batteries are only rated for 4 hours.
C. BYS batteries are only rated for 2 hours.
D. Correct – SOP-0054 provides guidance to use BYS-EG1 to supply the backup battery charger to recharge station batteries as needed during a loss of AC power.

Technical Reference(s): R-STM-0305, SOP-0054

Proposed references to be provided to applicants during examination: NA

Learning Objective: RLP-STM-0305 Obj 11

Question Source: New

Question History: Last NRC Exam NA

Cognitive Level: Memory or Fundamental Knowledge ☑3 Comprehension or Analysis ☐

10 CFR Part 55 Content: 55.41.b7

Comments:

QUESTION 50 Rev 0

Examination Outline Cross-Reference:	Level		RO ☑	SRO ☐
	Tier #	2	Group #	1
	K/A #	264000 K1.01		IR 3.8

Knowledge of the physical connections and/or cause-effect relationships between EDGs and AC electrical distribution.

Proposed Question:

The Division 2 standby diesel generator is supplying ENS-SWG1B, 4160V STANDBY SWGR BUS 1A in parallel with the Normal supply breaker ENS-ACB26 when a LOCA signal occurs.

Which of the following describes the effect on the standby diesel generator and ENS-SWG1B?

A. The Normal supply breaker will open and the diesel generator will supply bus loads.

B. The Normal supply breaker and diesel generator output breakers will open. After loads are shed, the output breaker will reclose.

C. The diesel generator output breaker will open and cannot be closed as long as bus voltage is supplied by the normal or alternate feeders until the LOCA signal is reset.

D. The diesel generator output breaker will remain closed in parallel operation with the bus.

Proposed Answer: C.

Explanation:
A. The Normal breaker will not open. It will remain closed supplying the bus. The DG output breaker will open and the diesel will remain running unloaded.
B. The bus will not shed all loads as there is no undervoltage signal.
C. Correct-The diesel would only supply the bus under LOCA conditions if an undervoltage condition was also present. The output breaker will open and the diesel will remain running unloaded.
D. The output breaker will not remain closed due to the LOCA signal.

Technical Reference(s): R-STM-0309

Proposed references to be provided to applicants during examination: NA

Learning Objective: RLP-STM-0309 Obj 15

Question Source: Bank # RBS-NRC-199

Question History: Last NRC Exam NA

Cognitive Level: Memory or Fundamental Knowledge ☐ Comprehension or Analysis ☑3

10 CFR Part 55 Content: 55.41.b7 Comments:

QUESTION 51 Rev 0

Examination Outline Cross-Reference:	Level		RO ☑	SRO ☐	
		Tier #	2	Group #	1
		K/A #	264000 A2.08		IR 3.3

Ability to (a) predict the impact of initiation of emergency generator room fire protection system on the EDGs and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of that abnormal operation.

Proposed Question:

With the Division 1 diesel generator in service, an alarm is received in the main control room indicating that FPW-PS-2A deluge valve has inadvertently opened. There is no fire present in the Division 1 diesel generator room.

Which of the following describes the impact of this condition and the procedural actions to be taken to mitigate this condition?

A. Fire Protection water is flowing into the diesel room. Secure the diesel generator per SOP-0053.

B. Fire Protection water is flowing into the diesel room. The diesel has tripped on the PS-2A actuation. Respond to the diesel generator trip per the alarm response procedure.

C. Fire Protection water is <u>NOT</u> flowing into the diesel room due to the sprinkler head which opens on high temperature, but diesel has tripped on the PS-2A actuation. Respond to the diesel generator trip per the alarm response procedure.

D. Fire Protection water is <u>NOT</u> flowing into the diesel room due to the sprinkler head which opens on high temperature. Manually isolate fire protection per SOP-0037 to prevent inadvertent water flow on to the diesel.

Proposed Answer: D.

Explanation:
A. Sprinkler head prevents water flow.
B. Sprinkler head prevents water flow. No automatic diesel trip on fire water actuation.
C. No automatic diesel trip on fire water actuation.
D. Correct – The fire protection in the diesel room is equipped with a pre-action system. Electronic detection opens a deluge valve to fill the system with water, but a head sensitive sprinkler head prevents water flow into the area if the deluge valve inadvertently opens. With no fire in the room, the sprinkler head would not be opened, therefore no water would be flowing into the room. Until the deluge valve can be manually reset, the manual valve should be isolated to prevent inadvertent water flow into the area. This would require hourly fire watch, but this is beyond the scope of an RO question.

Technical Reference(s): R-STM-0250

Proposed references to be provided to applicants during examination: NA

Learning Objective: RLP-STM-0250 Obj 3

Question Source: New

Question History: Last NRC Exam NA

Cognitive Level: Memory or Fundamental Knowledge ☐ Comprehension or Analysis ☑3

10 CFR Part 55 Content: 55.41.b7 Comments:

QUESTION 52 Rev 0

Examination Outline Cross-Reference:	Level		RO ☑	SRO ☐
	Tier #	2	Group #	1
	K/A #	300000 K1.05		IR 3.1

Knowledge of the physical connections and/or cause-effect relationships between instrument air system and Main Steam Isolation Valve air.

Proposed Question:

With the plant operating at rated conditions, IAS-MOV106, INSTR AIR OUTBD ISOL is inadvertently closed.

Which of the following describes the response of the Inboard Main Steam Isolation Valves?

A. The MSIVs will be maintained open by the air reserve in the MSIV air accumulator.

B. The MSIVs will remain open because air is only used to close the MSIVs.

C. The MSIVs will close within 3-5 seconds after the closure of IAS-MOV106.

D. The MSIVs will close a few minutes after the closure of IAS-MOV106.

Proposed Answer: D.

Explanation
A. The accumulator will not maintain the MSIV open. The air accumulator only supplies air to the top of the actuator providing an air assist to the spring which is closing the MSIV as spring pressure overcomes air pressure. The loss of air to the Air Pilot Valve and the Main Control Valve causes their ports to realign exhausting the under side of the actuator piston allowing spring pressure to overcome air pressure.
B. See “A”.
C. The 3-5 seconds closing time is for an actual isolation signal. The isolation results in a sudden loss of air pressure where the IAS-MOV106 results in a slower decay of pressure. Plant data indicates approximately 5 minutes.
D. Correct-As pressure decays, spring pressure will overcome air pressure closing the MSIV. Plant data indicates about 5 minutes.

Technical Reference(s): R-STM-0109 Figure 17

Proposed references to be provided to applicants during examination: NA

Learning Objective: RLP-STM-0109 Obj 20

Question Source: New

Question History: Last NRC Exam NA

Cognitive Level: Memory or Fundamental Knowledge ☐ Comprehension or Analysis ☑2

10 CFR Part 55 Content: 55.41.b7

Comments:

QUESTION 53 Rev 0

Examination Outline Cross-Reference:	Level		RO ☑	SRO ☐
	Tier #	2	Group #	1
	K/A #	400000 A2.02		IR 2.8

Ability to (a) predict the impact of high/low surge tank level on the CCW system and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of that abnormal operation.

Proposed Question:

An alarm has been received in the Main Control Room indicating a low level condition exists in the CCP Surge Tank. Local investigation revealed a broken air supply line to the tank makeup valve.

(1) What is the concern of reduced surge tank level and (2) in accordance with the applicable alarm response procedure, what action can be taken to mitigate this failure to allow continued operation?

A. (1) Loss of surge volume for thermal expansion. (2) Align Service Water to supply CCP safety related loads.

B. (1) Reduction in NPSH to CCP pumps. (2) Open manual bypass around failed AOV to make up to tank.

C. (1) Loss of surge volume for thermal expansion. (2) Open manual bypass around failed AOV to make up to tank.

D. (1) Reduction in NPSH to CCP pumps. (2) Align Service Water to supply CCP safety related loads.

Proposed Answer: B

Explanation:
A. More volume is available for thermal expansion and aligning Service Water does not supply all loads therefore continued operation would not be possible. (Example: Reactor Recirculation pumps would lose cooling).
B. Correct-Loss of surge tank level results in decrease in NPSH for the CCP pumps. ARP gives guidance to open bypass valve.
C. See “A” for Part (1). Part (2) is correct.
D. Part (1) is correct. See “A” for Part (2).

Technical Reference(s): ARP-P870-55A-E04

Proposed references to be provided to applicants during examination: NA

Learning Objective: RLP-STM-0115 Obj 3, 5

Question Source: Bank # RBS 2008 A-53

Question History: Last NRC Exam NA

Cognitive Level: Memory or Fundamental Knowledge ☐ Comprehension or Analysis ☑3

10 CFR Part 55 Content: 55.41.b4, 55.41.b10 Comments:

QUESTION 54 Rev 0

Examination Outline Cross-Reference:	Level		RO ☑	SRO ☐
	Tier #	2	Group #	2
	K/A #	201003 K1.04		IR 2.9

Knowledge of the physical connections and/or cause-effect relationships between control rod drive mechanism and reactor vessel.

Proposed Question:

A scram has just occurred and AOP-0001, REACTOR SCRAM is being executed.

Which one of the following describes the primary concern of prolonged operation with the reactor scram signal NOT reset?

A. RPV boundary moved out to the Scram Discharge Volume Vents and Drains.

B. CRD pump operating in runout condition.

C. Excessive discharge of hot radioactive water to the containment equipment drain sump.

D. Excessive cooldown of the RPV bottom head due to elevated CRD flow.

Proposed Answer: D.

Explanation:
A. Although it is true that the RPV boundary is moved to the SDV vents and drains, the bottom head cooldown is the primary concern.
B. Orifices in the charging water header prevent runout conditions.
C. CRD water is being discharged to the drain sump.
D. Correct – AOP-0001, Section 5.2 addresses monitoring of bottom head temperature and lists resetting the scram as a method of mitigating this condition.

Technical Reference(s): AOP-0001

Proposed references to be provided to applicants during examination: NA

Learning Objective: RLP-STM-0052 Obj 10

Question Source: New

Question History: Last NRC Exam NA

Cognitive Level: Memory or Fundamental Knowledge ☑3 Comprehension or Analysis ☐

10 CFR Part 55 Content: 55.41.b5

Comments:

QUESTION 55 Rev 0

Examination Outline Cross-Reference:	Level		RO ☑	SRO ☐
	Tier #	2	Group #	2
	K/A #	202002 A3.02		IR 3.4

Ability to monitor automatic operations of Recirculation Flow Control including lights and alarms.

Proposed Question:

Consider the following indications on H13-P614 for Reactor Recirculation Hydraulic Power Unit “A”:

Subloop 1 the following lights are lit:
- READY
- LEAD
- OPERATIONAL
- PRESSURIZED

Subloop 2 the following light is lit:
- MAINTENANCE

Which of the following abnormal indicating lights may be lit, yet Subloop 1 remain in operation?

A. OVERLOAD (Subloop 1)

B. UNDERVOLTAGE (Subloop 1)

C. TANK LOW

D. OIL HOT

Proposed Answer: C.

Explanation:
A. SL1 will trip to MAINTENANCE on OVERLOAD.
B. SL1 will trip to MAINTENANCE on UNDERVOLTAGE.
C. Correct – Normally a subloop transfers to maintenance and the stby subloop becomes operational on the following: Undervoltage, Overload, Tank Low (70 gals), Oil Warm (145°F), and Low discharge pressure. In this case with no backup available (SL2 in maintenance), the reservoir level and temperature are delayed to Tank Empty (60 gals) and Oil Hot (150°F).
D. SL1 will trip to MAINTENANCE at 150°F OIL HOT

Technical Reference(s): R-STM-0053

Proposed references to be provided to applicants during examination: NA

Learning Objective: RLP-STM-0053 Obj 2

Question Source: New

Question History: Last NRC Exam NA

Cognitive Level: Memory or Fundamental Knowledge ☐ Comprehension or Analysis ☑3

10 CFR Part 55 Content: 55.41_____ Comments:

QUESTION 56 Rev 0

Examination Outline Cross-Reference:	Level		RO ☑	SRO ☐
	Tier #	2	Group #	2
	K/A #	204000 K1.05		IR 2.7

Knowledge of the physical connections and/or cause-effect relationships between RWCU and plant air system.

Proposed Question:

During surveillance testing, an inadvertent isolation of instrument air to the containment building occurs. Prior to restoration, IAS pressure in containment is 0 psig.

How is the Reactor Water Cleanup System (RWCU) affected?

A. Demineralizers isolate and begin automatic backwash sequence.

B. RWCU Pumps trip on low flow after time delay expires

C. G33-MOVF001, RWCU PUMPS INBD SUCTION VALVE and G33-MOVF004, RWCU PUMPS OUTBD SUCTION VALVE isolate

D. G33-PVF033 RWCU REJECT FLOW VALVE fails OPEN

Proposed Answer: B.

Explanation:
A. The demineralizers will isolate, but the backwash will be prevent because of low air pressure. Loss of the bubbler to the backwash tank.
B. Correct – The demineralizers will isolate resulting in system low flow. With flow <70 gpm for 55 seconds, the pumps will trip.
C. No isolation to these valves on low flow. Selected as a distractor since the isolation of F001 & F004 causes a pump trip which is the correct answer.
D. The reject valve to the condenser fails CLOSED on loss of air.

Technical Reference(s): R-STM-0601

Proposed references to be provided to applicants during examination: NA

Learning Objective: RLP-STM-0601 Obj 12

Question Source: New

Question History: Last NRC Exam NA

Cognitive Level: Memory or Fundamental Knowledge ☐ Comprehension or Analysis ☑4

10 CFR Part 55 Content: 55.41.b3

Comments:

QUESTION 57 Rev 0

Examination Outline Cross-Reference:	Level		RO ☑	SRO ☐
	Tier #	2	Group #	2
	K/A #	216000 A2.01		IR 2.9

Ability to (a) predict the impact of detector equalizing valve leaks on the Nuclear Boiler Instrumentation system and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of that abnormal operation.

Proposed Question:

The plant is operating at 100% power. The Feedwater Level Control System is in automatic control with the “A” Level Channel selected.

The equalizing valve for the “A” Channel level detector has developed significant seat leakage.

Which of the following describes the (1) impact of the leak and (2) the appropriate actions to take to mitigate the condition in accordance with AOP-0006 Condensate and Feedwater Failures?

Reactor water level will…

A. (1) rise. (2) Depress the “B” level select pushbutton

B. (1) lower. (2) Manually control the feedwater level control system

C. (1) lower. (2) Depress the “B” level select pushbutton

D. (1) rise. (2) Manually control the feedwater level control system

Proposed Answer: B.

Explanation:
A. See “B”.
B. Correct – The leak will cause sensed differential pressure to lower. A lowering dp is seen as rising level. The FW reg valves will close to combat the “indicated” rising level causing actual level to lower. The appropriate action per AOP-0006 is to place the Master Controller in Manual and manually control level.
C. See “B”.
D. See “B”.

Technical Reference(s): R-STM-0107, AOP-0006

Proposed references to be provided to applicants during examination: NA

Learning Objective: RLP-STM-0107B Obj 14; RLP-HLO-0525 Obj 4, 5

Question Source: New

Question History: Last NRC Exam NA

Cognitive Level: Memory or Fundamental Knowledge ☐ Comprehension or Analysis ☑3

10 CFR Part 55 Content: 55.41.b5 & b10

Comments:

QUESTION 58 Rev 0

Examination Outline Cross-Reference:	Level		RO ☑ SRO ☐
	Tier #	2	Group # 2
	K/A #	K1.02	IR 3.1

Knowledge of the electrical power supplies to RHR/LPCI: Pool Cooling mode pumps.

Proposed Question:

The power supply to RHR Pump ‘A’ is _____________.

A. ENS-SWG1A

B. ENS-SWG3A

C. EJS-SWG1A

D. EJS-SWG2A

Proposed Answer: A.

Explanation:
A. Correct. The power supply to RHR A is ENS-SWG1A
B. See “A”.
C. See “A”.
D. See “A”.

Technical Reference(s): SOP-0031

Proposed references to be provided to applicants during examination: NA

Learning Objective: RLP-STM-0204 Obj 11

Question Source: New

Question History: Last NRC Exam NA

Cognitive Level: Memory or Fundamental Knowledge ☑2 Comprehension or Analysis ☐

10 CFR Part 55 Content: 55.41.b7

Comments:

QUESTION 59 Rev 0

Examination Outline Cross-Reference:	Level		RO ☑	SRO ☐
	Tier #	2	Group #	2
	K/A #	234000 K3.03		IR 3.1

Knowledge of the effect that a loss or malfunction of the Fuel Handling Equipment will have on fuel handling operations.

Proposed Question:

A refueling outage is in progress. The reactor mode switch is in the REFUEL position. The refueling bridge is unloaded and traveling towards the core.

Which of the following will result in a Control Rod Withdrawal Block?

A. Refueling bridge traveling over the core.

B. Any control rod is withdrawn.

C. Refueling bridge traveling over the core with a malfunctioning load cell indicating the mast is loaded.

D. An attempt is made to select a control rod when another control rod is withdrawn.

Proposed Answer: C.

Explanation:
A. The bridge may travel over the core without generating a rod block if it is not loaded.
B. The bridge may travel over the core with a rod withdraw without generating a rod block if it is not loaded.
C. Correct – The refueling interlocks cause a rod block whenever the bridge travels over the core with the mast loaded to prevent inadvertent criticality from withdrawing a rod from a cell which may be receiving a fuel bundle. Even if the mast is not loaded, a malfunction in the hoist loaded indication would be interpreted as hoist loaded generating the rod block.
D. In this condition, the second rod is prevent from being selected, but not a rod block.

Technical Reference(s): R-STM-0055

Proposed references to be provided to applicants during examination: NA

Learning Objective: RLP-STM-0055 Obj 12, 13

Question Source: New

Question History: Last NRC Exam NA

Cognitive Level: Memory or Fundamental Knowledge ☐ Comprehension or Analysis ☑3

10 CFR Part 55 Content: 55.41.b7

Comments:

QUESTION 60 Rev 0

Examination Outline Cross-Reference:	Level		RO ☑	SRO ☐
	Tier #	2	Group #	2
	K/A #	239003 G.2.2.22		IR 4.0

Knowledge of MSIV Leakage Control limiting conditions for operations and safety limits.

Proposed Question:

In accordance with Technical Specification 3.6.1.9 – MS-PLCS,

___________ MS-PLCS subsystem(s) must be operable in Modes ___________

A. (1) At least one (2) 1, 2 and 3

B. (1) Two (2) 1, 2 and 3

C. (1) At least one (2) 1 and 2

D. (1) Two (2) 1 and 2

Proposed Answer: B.

Explanation:
A. See “B”.
B. Correct – Two subsystems are required in Modes 1, 2, and 3.
C. See “B”.
D. See “B”.

Technical Reference(s): TS 3.6.1.9; R-STM-0208

Proposed references to be provided to applicants during examination: NA

Learning Objective: RLP-STM-0208 Obj 8

Question Source: New

Question History: Last NRC Exam NA

Cognitive Level: Memory or Fundamental Knowledge ☑3 Comprehension or Analysis ☐

10 CFR Part 55 Content: 55.41.b5

Comments:

QUESTION 61 Rev 0

Examination Outline Cross-Reference:	Level		RO ☑ SRO ☐
	Tier #	2	Group # 2
	K/A #	241000 A1.12	IR 2.9

Ability to predict and/or monitor changes in parameters associated with operating Reactor/Turbine Pressure Regulator controls including reactor/turbine pressure regulating system load set reference.

Proposed Question:

The Main Generator is operating at 980 MWe when the Main Turbine load setpoint is lowered from 1100 to 750 MWe without changing reactor power.

Which of the following is the expected plant response?

A. Bypass Valves open, however the reactor scrams due to high RPV pressure.

B. Plant operation continues with a Main Generator load of 750 MWe

C. Bypass Valves open to control pressure and Main Generator load decreases to 750 MWe.

D. Bypass Valves remain closed due to circuitry bias. Main Generator load decreases to 750 MWe and reactor pressure increases slightly.

Proposed Answer: A.

Explanation:
A. Correct-The bypass valves are only sized to handle 10% rated steam flow. Although they will open, reactor pressure will still rise until the scram setpoint is exceeded.
B. Plant operation can not continue since corresponding change to reactor power was not made.
C. Bypass valve capacity is not large enough to handle the excess energy unloaded from the turbine.
D. Negative circuity bias is only 0.3% steam flow.

Technical Reference(s): R-STM-0509

Proposed references to be provided to applicants during examination: NA

Learning Objective: RLP-STM-0509 Obj 7, 11

Question Source: Modified Bank # RBS-NRC-01115 (Parent)

Question History: Last NRC Exam NA

Cognitive Level: Memory or Fundamental Knowledge ☐ Comprehension or Analysis ☑3

10 CFR Part 55 Content: 55.41.b7

Comments: Question modified in the stem to make a different answer choice correct.

QUESTION 62 Rev 0

Examination Outline Cross-Reference:	Level	RO ☑	SRO ☐
	Tier # 2	Group # 2	
	K/A # 245000 K4.10		IR 2.6

Knowledge of main turbine generator auxiliaries design feature(s) and or interlock(s) which provide for extraction steam.

Proposed Question:

While the plant was operating at rated conditions, an Extreme High Level condition occurred in the 1st point heater "A".

Which of the following represents the expected position of the listed components due to the above condition?

- ESS-MOV3A, 1st PT HTR A EXTR ISOL
- ESS-MOV3B, 1st PT HTR B EXTR ISOL
- DTM-AOV41A, 1st PT HTR EXTR LINE DR
- DTM-AOV41B, 1st PT HTR EXTR LINE DR

ESS-MOV3A	ESS-MOV3B	DTM-AOV41A	DTM-AOV41B
A. CLOSED	CLOSED	OPEN	OPEN
B. CLOSED	OPEN	CLOSED	OPEN
C. CLOSED	OPEN	OPEN	CLOSED
D. OPEN	CLOSED	OPEN	CLOSED

Proposed Answer: C.

Explanation:
A. See "C".
B. See "C".
C. Correct – The extreme high level causes and isolation of ESS-MOV3A only. Although procedures directed manual isolation of the 3B if 3A will be closed for an extended period of time, the ESS-MOV3B does not automatically isolate. Additionally, the ESS drain line air operated valve DTM-AOV41 opens to prevent condensation from building up in the ESS line. 41B is not affected so remains shut.
D. See "C".

Technical Reference(s): R-STM-0108

Proposed references to be provided to applicants during examination: NA

Learning Objective: RLP-STM-0108 Obj 12, 16

Question Source: New

Question History: Last NRC Exam NA

Cognitive Level: Memory or Fundamental Knowledge ☐ Comprehension or Analysis ☑3

10 CFR Part 55 Content: 55.41.b7

Comments:

QUESTION 63 Rev 0

Examination Outline Cross-Reference:	Level		RO ☑	SRO ☐
	Tier #	2	Group #	2
	K/A #	259001 A4.01		IR 3.6

Ability to manually operate and/or monitor reactor feedwater system flow in the control room.

Proposed Question:

The Feedwater Level Control System is in 3 Element Control with the Master Controller and all 3 Feedwater Regulating valves in Automatic.

The output signal from a steam line flow transmitter has just failed low.

How will feedwater flowrate be affected by this condition?

Feedwater flowrate will…

A. lower and then return to the approximate pre-transient flowrate with level stabilized at a lower value.

B. rise and then return to the approximate pre-transient flowrate with level stabilized at a higher value.

C. lower until a Level 3 scram occurs.

D. rise until a Level 8 scram occurs.

Proposed Answer: A.

Explanation:
A. Correct – The FWLC will attempt to match FW flow and Steam flow. With a portion of the total steam flow lost, FW flow will be reduced to match steam flow. As flow is reduced, level lowers. The systems will then raise FW flow due to lowering level. The result will be pre transient flow rate with level lower but stable.
B. See “A”.
C. See “A”.
D. See “A”.

Technical Reference(s): R-STM-0107

Proposed references to be provided to applicants during examination: NA

Learning Objective: R-STM-0107B Obj 14

Question Source: New

Question History: Last NRC Exam NA

Cognitive Level: Memory or Fundamental Knowledge ☐ Comprehension or Analysis ☑3

10 CFR Part 55 Content: 55.41.b7

Comments:

QUESTION 64 Rev 0

Examination Outline Cross-Reference:	Level		RO ☑ SRO ☐
	Tier #	2	Group # 2
	K/A #	271000 K5.04	IR 2.9

Knowledge of the operational implications of hydrogen concentration measurement as it applies to Offgas.

Proposed Question:

Which of the following describes the potential operational implications of Hydrogen concentrations above 4% in the Offgas system?

A. Excessive flow through the Offgas system resulting in reduced holdup time and elevated dose rates.

B. Excessive moisture content following recombination of hydrogen and oxygen overloading system drains.

C. Excessive moisture content following recombination of hydrogen and oxygen causing icing in the charcoal beds.

D. Hydrogen explosion or deflagration and ignition of the charcoal beds.

Proposed Answer: D.

Explanation:
A. See “D”.
B. See “D”
C. See “D”
D. Correct – At 4% hydrogen concentration, the lower explosive limit for hydrogen has been reached.

Technical Reference(s): R-STM-0606, AOP-0039

Proposed references to be provided to applicants during examination: NA

Learning Objective: RLP-STM-0606 Obj 10

Question Source: New

Question History: Last NRC Exam NA

Cognitive Level: Memory or Fundamental Knowledge ☑3 Comprehension or Analysis ☐

10 CFR Part 55 Content: 55.41.b5

Comments:

QUESTION 65 Rev 0

Examination Outline Cross-Reference:	Level		RO ☑	SRO ☐
	Tier #	2	Group #	2
	K/A #	290003 K3.03		IR 2.9

Knowledge of the effect that a loss or malfunction of the control room HVAC will have on control room temperature.

Proposed Question:

A failure in the start logic for HVK has resulted in a total loss of all HVK chillers.

What is the effect of the above condition?

A. Main control room personnel exposure to elevated dose rates during a LOCA.

B. Inability to maintain the integrity of the control room pressure boundary during a LOCA.

C. Loss of all control building smoke removal capability.

D. Control room heatup with potential loss of control function.

Proposed Answer: D.

Explanation:
A. Protection for MCR personnel from elevated radiation conditions is provided by HVC filter trains, not HVC air handling units or HVK chillers.
B. During a LOCA, the HVC filter trains maintain a positive pressure area in the MCR.
C. Although they are HVC components, smoke removal fans are independent of HVK and HVC air handling units.
D. Correct - HVK and HVC air handling units are responsible for main control room temperature control. If lost, control room heat up will occur with the potential of loss of control capability if some components fail in the high temperature environment.

Technical Reference(s): R-STM-0402

Proposed references to be provided to applicants during examination: NA

Learning Objective: RLP-STM-0402 Obj 1, 2, 11

Question Source: New

Question History: Last NRC Exam NA

Cognitive Level: Memory or Fundamental Knowledge ☐ Comprehension or Analysis ☑2

10 CFR Part 55 Content: 55.41.b7

Comments:

QUESTION 66 Rev 0

Examination Outline Cross-Reference:	Level		RO ☑	SRO ☐
	Tier #	3	Group #	1
	K/A #	G.2.1.3	IR 3.7	

Knowledge of shift or short-term relief turnover practices.

Proposed Question:

In accordance with OSP-0002, SHIFT RELIEF AND TURNOVER, which of the following may be completed as early in the shift as possible as opposed to prior to assuming the shift?

A. Verification of training qualifications

B. Review Control Room Logs

C. Walkdown ATC areas control boards

D. Time and date chart recorders

Proposed Answer: D.

Explanation:
A. Verification of training quals is required prior to assuming the shift.
B. Review of Control Room Logs is required prior to assuming the shift.
C. Walkdown of ATC area control boards is required prior to assuming the shift (Backpanel walkdowns are to be completed as early in the shift as possible).
D. Correct – Time and dating of chart recorders is to be completed as early in the shift as possible per OSP-0002 UO/ATC Relief Checksheet Part 2.

Technical Reference(s): OSP-0002 Att 3

Proposed references to be provided to applicants during examination: NA

Learning Objective: RLP-OPS-NLO-415 Obj 2, 3

Question Source: New

Question History: Last NRC Exam NA

Cognitive Level: Memory or Fundamental Knowledge ☑2 Comprehension or Analysis ☐

10 CFR Part 55 Content: 55.41.b10

Comments:

QUESTION 67 Rev 0

Examination Outline Cross-Reference:	Level		RO ☑	SRO ☐
	Tier #	3	Group #	1
	K/A #	G.2.1.13		IR 2.5

Knowledge of facility requirements for controlling vital/controlled access.

Proposed Question:

Which of the following is <u>NOT</u> required to obtain unescorted access to the River Bend Protected Area?

A. Plant Access Training

B. Drug Testing

C. Radiation Worker Training

D. Psychological Testing

Proposed Answer: C.

Explanation:
A. Plant Access Training (GET 1) is required to obtain and maintain unescorted access to the Protected Area.
B. Drug testing is required to obtain unescorted access to the Protected Area. The authorized individual is also subject to random drug testing.
C. Correct - Although required to enter the RCA and obtain a DLR (Dosimeter of Legal Record), Rad Worker Training (GET 2) is not required to have unescorted access to the Protected Area.
D. Psychological testing is required to obtain unescorted access to the Protected Area.

Technical Reference(s): EN-NS-116

Proposed references to be provided to applicants during examination: NA

Learning Objective: None available.

Question Source: New

Question History: Last NRC Exam NA

Cognitive Level: Memory or Fundamental Knowledge ☑2 Comprehension or Analysis ☐

10 CFR Part 55 Content: 55.41.b10

Comments:

QUESTION 68 Rev 0

Examination Outline Cross-Reference:	Level		RO ☑	SRO ☐
	Tier #	3	Group #	1
	K/A #	G.2.1.34		IR 2.7

Knowledge of primary and secondary plant chemistry limits.

Proposed Question:

With the plant in Mode 1, which of the following coolant chemistry parameters requires entry into TR 3.4.13 – Chemistry?

A. Chlorides 0.12 ppm

B. pH 6.8

C. pH 7.8

D. Conductivity 1.05 μmhos/cm

Proposed Answer: D.

Explanation:
A. In Mode 1, chloride limit is ≤0.2 ppm.
B. In Mode 1, pH limit is ≥5.6 and ≤8.6.
C. In Mode 1, pH limit is ≥5.6 and ≤8.6.
D. Correct – In Mode 1, conductivity limit is ≤1.0 μmhos/cm.

Technical Reference(s): TR 3.4.13 Table 3.4.13-1

Proposed references to be provided to applicants during examination: NA

Learning Objective: RLP-STM-0601 Obj 9

Question Source: New

Question History: Last NRC Exam NA

Cognitive Level: Memory or Fundamental Knowledge ☑3 Comprehension or Analysis ☐

10 CFR Part 55 Content: 55.41.b5

Comments:

QUESTION 69 Rev 0

Examination Outline Cross-Reference:	Level		RO ☑ SRO ☐
	Tier #	3	Group # 2
	K/A #	G.2.2.6	IR 3.0

Knowledge of the process for making changes to procedures.

Proposed Question:

In accordance with RBNP-001, DEVELOPMENT AND CONTROL OF RBS PROCEDURES, a Comment PAR, may be used for which of the following?

A. To make minor changes that result in a change of intent.

B. To correct typographical errors to a procedure that is being implemented.

C. To make suggestions for future procedure improvements.

D. To change acceptance criteria.

Proposed Answer: C.

Explanation
A. A procedure “Revision” is required for changes that result in a change of intent.
B.This requires an Editorial change.
C. Correct - This choice describes a “Comment”.
D. A change in acceptance criteria also results in a change of intent, so would require a “Revision”

Technical Reference(s): RBNP-001

Proposed references to be provided to applicants during examination: NA

Learning Objective: RLP-HLO-202 Obj 1

Question Source: Bank # RBS-OPS-1667

Question History: Last NRC Exam NA

Cognitive Level: Memory or Fundamental Knowledge ☑2 Comprehension or Analysis ☐

10 CFR Part 55 Content: 55.41.b10

Comments:

QUESTION 70 Rev 0

Examination Outline Cross-Reference:	Level		RO ☑	SRO ☐
	Tier #	3	Group #	2
	K/A #	G.2.2.17		IR 2.6

Knowledge of the process for managing maintenance activities during power operations, such as risk assessments, work prioritization, and coordination with the transmission system operator.

Proposed Question:

In accordance with OSP-0101, TURBINE GENERATOR PERIODIC TESTING, which of the following activities requires prior notification to the Pine Bluff transmission system operator?

A. Voltage Regulator Test

B. Mechanical Overspeed Trip Test

C. Mechanical Trip Piston Test

D. Backup Speed Amplifier Test

Proposed Answer: A.

Explanation:
A. Correct – This test requires placing the voltage regulator in MANUAL. Both SOP-0080 and OSP-0101 require notification to Pine Bluff operator prior to placing the voltage regulator in manual.
B. No requirement to make a notification prior to this test.
C. No requirement to make a notification prior to this test.
D. No requirement to make a notification prior to this test.

Technical Reference(s): OSP-0101

Proposed references to be provided to applicants during examination: NA

Learning Objective: RLP-STM-0110 Obj 7

Question Source: New

Question History: Last NRC Exam NA

Cognitive Level: Memory or Fundamental Knowledge ☑3 Comprehension or Analysis ☐

10 CFR Part 55 Content: 55.41.b10

Comments:

QUESTION 71 Rev 0

Examination Outline Cross-Reference:	Level		RO ☑	SRO ☐
	Tier #	3	Group #	2
	K/A #	G.2.2.42		IR 3.9

Ability to recognize system parameters that are entry-level conditions for Technical Specifications.

Proposed Question:

Consider the following plant parameters:

- Mode 1, 100% power

- Sup Pool Level 19 feet 7 inches
- Sup Pool Temp 98°F
- Cont Temp 92°F
- Cont. Press 0.27 psig

Which of the following Technical Specification Limiting Condition for Operation should be entered?

A. TS 3.6.1.4 – Primary Containment Pressure

B. TS 3.6.1.5 – Primary Containment Air Temperature

C. TS 3.6.2.1 – Suppression Pool Average Temperature

D. TS 3.6.2.2 – Suppression Pool Water Level

Proposed Answer: B.

Explanation:
A. The limit for TS 3.6.1.4 is ≥-0.3 psig and ≤0.3 psig, At 0.27 psig entry is not required.
B. Correct - The limit for TS 3.6.1.5 is ≤90°F. At 92°F, entry is required.
C. The limit for TS 3.6.2.1 is ≤100°F, At 98°F entry is not required.
D. The limit for TS 3.6.2.2 is ≥19'6" and ≤20'0", At 19'7" entry is not required.

Technical Reference(s): Technical Specifications

Proposed references to be provided to applicants during examination: NA

Learning Objective: RLP-STM-0057 Obj 9

Question Source: New

Question History: Last NRC Exam NA

Cognitive Level: Memory or Fundamental Knowledge ☐ Comprehension or Analysis ☑2

10 CFR Part 55 Content: 55.41.b10

Comments:

QUESTION 72   Rev 0

Examination Outline Cross-Reference:	Level	RO ☑	SRO ☐
	Tier # 3	Group # 3	
	K/A # G.2.3.12		IR 3.2

Knowledge of radiological safety principles pertaining to licensed operator duties, such as containment entry requirements, fuel handling responsibilities, access to locked high-radiation areas, aligning filters, etc.

Proposed Question:

During a refueling outage maintenance personnel require access to the annulus fuel transfer tube area.

In addition to operation of the palm handswitch outside the gate, which of the following are also required to allow access to this area?

A. Keylock switch on H13-P863 in ACCESS

B. Keylock switch outside the fuel building support room gate in ACCESS

C. Keylock switch on IFTS in the reactor building in ACCESS

D. Keylock switch outside the containment transfer tube support room in ACCESS

Proposed Answer: A.

Explanation:
A. Correct – To access the annulus fuel transfer area requires: 1)H13-P863 keylock switch, 2)Switch outside specific gate requiring entry in ACCESS/OPEN, 3) Switch on IFTS Master Relay panel in the Fuel Bldg, 4)Local palm switch depressed.
B. This switch would be required if the fuel building fuel transfer tube room required access.
C. The IFTS keylock switch is on the Fuel Bldg IFTS panel, not reactor bldg.
D. This switch would be required if the containment fuel transfer tube room required access.

Technical Reference(s): R-STM-0055, FHP-0005 2.19

Proposed references to be provided to applicants during examination: NA

Learning Objective: RLP-STM-0055 Obj 4, 6

Question Source: New

Question History: Last NRC Exam NA

Cognitive Level: Memory or Fundamental Knowledge ☑3 Comprehension or Analysis ☐

10 CFR Part 55 Content: 55.41.b12

Comments:

QUESTION 73 Rev 0

Examination Outline Cross-Reference:	Level		RO ☑	SRO ☐
	Tier #	3	Group #	3
	K/A #	G.2.3.5	IR 2.9	

Ability to use radiation monitoring systems, such as fixed radiation monitors and alarms, portable survey instruments, personnel monitoring equipment, etc.

Proposed Question:

At H13-P879, on the RM-23 for RMS-RE5A, the operator depresses the following sequence of keystrokes:

- MON
- 0 2 8
- ITEM

Which of the following appears on the numeric display following this activity?

A. Sample Flow Rate

B. Process Flow Rate

C. Current Activity Level

D. Count of Moving Filter Clicks

Proposed Answer: A.

Explanation:
A. Correct – “Mon,028,Item” displays rad monitor sample flow rate.
B To display process flow, “Mon,029,Item” must be depressed.
C. Digital display defaults to activity value without depressing any keys.
D. To display count of moving filter clicks, “Mon,051,Item” must be depressed.

Technical Reference(s): SOP-0086, STP-000-0001

Proposed references to be provided to applicants during examination: NA

Learning Objective: RLP-STM-0511 Obj 5, 17

Question Source: New

Question History: Last NRC Exam NA

Cognitive Level: Memory or Fundamental Knowledge ☑3 Comprehension or Analysis ☐

10 CFR Part 55 Content: 55.41.b11

Comments:

QUESTION 74 Rev 0

Examination Outline Cross-Reference:	Level	RO ☑	SRO ☐
	Tier # 3	Group # 4	
	K/A # G.2.4.30		IR 2.7

Knowledge of events related to system operation/status that must be reported to internal organizations or external agencies, such as the State, the NRC, or the transmission system operator.

Proposed Question:

Which of the following events require notification to personnel outside the River Bend organization within 15 minutes of occurrence?

A. Violation of a Technical Specification Safety Limit.

B. Component failures resulting in a loss of safety function of a system required to mitigate the consequences of an accident.

C. Declaration of a plant emergency.

D. Initiation of a plant shutdown required by Tech Specs.

Proposed Answer: C.

Explanation:
A. Safety limit violation requires a notification to the NRC within 1 hour of occurrence.
B. Loss of safety function requires an 8 report to the NRC.
C. Correct. Emergency declaration requires a 15 minutes notification to state and local agencies.
D. Initiation of a shutdown required by Tech Specs requires a 4 hour report (50.72(b)(2)(i)).

Technical Reference(s): EIP-2-002

Proposed references to be provided to applicants during examination: NA

Learning Objective: LEC-EP-023 Obj 1

Question Source: New

Question History: Last NRC Exam NA

Cognitive Level: Memory or Fundamental Knowledge ☑3 Comprehension or Analysis ☐

10 CFR Part 55 Content: 55.41.b10

Comments:

QUESTION 75 Rev 0

Examination Outline Cross-Reference:	Level		RO ☑	SRO ☐
	Tier #	3	Group #	4
	K/A #	G.2.4.43		IR 3.2

Knowledge of emergency communications systems and techniques.

Proposed Question:

Following an E-plan emergency declaration at River Bend, the NRC is notified within one hour using which one of the following?

A. Dialogics System

B. State and Local Hotline

C. Emergency Notification System

D. Emergency Support Package Communication (ESP_COMM)

Proposed Answer: C.

Explanation
A. Dialogics is the system used to activate the ERO via pagers.
B. S&L Hotline is for commincation with state and local agencies during an emergency.
C. Correct- ENS is used for emergency communications to the NRC.
D. ESP_COMM is used to send emergency declaration/upgrades to state and local agencies.

Technical Reference(s): EIP-2-006

Proposed references to be provided to applicants during examination: NA

Learning Objective: EP-023 Obj 4

Question Source: Bank # RBS-NRC-793

Question History: Last NRC Exam RBS 2003

Cognitive Level: Memory or Fundamental Knowledge ☑3 Comprehension or Analysis ☐

10 CFR Part 55 Content: 55.41.b.10

Comments:

QUESTION 76 Rev 0

Examination Outline Cross-Reference:	Level		RO ☐	SRO ☑
	Tier #	1	Group #	1
	K/A #	295003 AA2.02		IR 4.3

Ability to determine and interpret reactor power, pressure and level as it applies to a partial or complete loss of AC.

Proposed Question:

The plant was operating at rated power when a loss of offsite power occurred. Of the three diesel generators, only the HPCS Diesel Generator is operating.

Ten minutes after the loss of power, the following conditions exist:

Post Accident Monitor recorders B21-R623A and B on H13-P601 are indicating
(1) RPV pressure is cycling between approximately 966 and 1103 psig
(2) RPV level is 0 inches and slowly rising

- SRV F051C is cycling open and closed
- SRV-F051D opened and remained open

Which of the following abnormal and emergency procedures contain the appropriate action steps to mitigate the consequences of the conditions above?

A. AOP-0004, LOSS OF OFFSITE POWER and EOP-0001, RPV CONTROL

B. AOP-0004, LOSS OF OFFSITE POWER and EOP-0001A, RPV CONTROL-ATWS

C. AOP-0050, STATION BLACKOUT and EOP-0001, RPV CONTROL

D. AOP-0050, STATION BLACKOUT and EOP-0001A, RPV CONTROL-ATWS

Proposed Answer: D.

Explanation:
A. With only HPCS DG operating, conditions are considered a Station Blackout. With one SRV cycling and one open 10 mins after a scram, the unit is not shutdown. (ATWS)
B. With only HPCS DG operating, conditions are considered a Station Blackout.
C. With one SRV cycling and one open 10 mins after a scram, the unit is not shutdown. (ATWS)
D. Correct.

Technical Reference(s): AOP-0050, EOP-0001A

Proposed references to be provided to applicants during examination: NA

Learning Objective: HLO-513 Obj 3 ; RLP-OPS-HLO 541 Obj 2

Question Source: Bank # RBS-NRC-217

Question History: Last NRC Exam RBS 2004

Cognitive Level: Memory or Fundamental Knowledge ☐ Comprehension or Analysis ☑3

10 CFR Part 55 Content: 55.43.b5 Comments:

QUESTION 77 Rev 0

Examination Outline Cross-Reference:	Level		RO ☐	SRO ☑
	Tier #	1	Group # 1	
	K/A #	295004 G.2.4.46		IR 4.2

Ability to verify that the alarms are consistent with the plant conditions regarding Partial or Total Loss of DC Power.

Proposed Question:

During normal plant operation, several alarms are received on H13-P601 Insert 16, including:

- DIV III 125VDC SYSTEM TROUBLE
- DIV III BATTERY CHARGER TROUBLE

In addition to these alarms, the (2) 125VDC white power available lights on H13-P601 High Pressure Core Spray area are extinguished.

Which of the following procedures should the CRS enter to mitigate this condition?

A. SOP-0030, HIGH PRESSURE CORE SPRAY SYSTEM

B. SOP-0049, 125 VDC SYSTEM

C. AOP-0014, LOSS OF 125 VDC

D. AOP-0042, LOSS OF INSTRUMENT BUS

Proposed Answer: C.

Explanation:
A. This procedure is for normal operation of the High Pressure Core Spray System. The stem indicates abnormal conditions.
B. This procedure is for normal operation of the 125 VDC System. The stem indicates abnormal conditions.
C. Correct- The conditions in the stem indicate that 125 VDC to the HPCS has been lost. The correct procedure for this condition is AOP-0014.
D. This procedure deals with the loss of various uninterruptible power supplies. These UPS systems are associated with Div 1, Div 2 and non-safety related components.

Technical Reference(s): AOP-0014

Proposed references to be provided to applicants during examination: NA

Learning Objective: RLP-OPS-0532 Obj 2

Question Source: New

Question History: Last NRC Exam NA

Cognitive Level: Memory or Fundamental Knowledge ☐ Comprehension or Analysis ☑3

10 CFR Part 55 Content: 55.43.b5

Comments:

QUESTION 78 Rev 0

Examination Outline Cross-Reference:	Level		RO ☐	SRO ☑
	Tier #	1	Group # 1	
	K/A #	295006 AA2.04		IR 4.1_____

Ability to determine and interpret reactor pressure as it applies to a scram.

Proposed Question:

While operating at 100% power, the plant has experienced a Turbine Control Valve Fast Closure scram. The Main Turbine Bypass Valves have failed shut. Pressure is being controlled automatically with 1 SRV between 926 and 1063 psig.

Which of the following procedures are appropriate for this condition?

A. AOP-0001, REACTOR SCRAM; EOP-0001A RPV CONTROL

B. AOP-0002, TURBINE TRIP; EOP entry is not required.

C. AOP-0001, REACTOR SCRAM; AOP-0002, TURBINE TRIP; EOP-0001 RPV CONTROL

D. AOP-0001, REACTOR SCRAM; AOP-0002, TURBINE TRIP; EOP entry is not required.

Proposed Answer: C.

Explanation:
A. There are no indications in the stem that an ATWS is occurring. Pressure cycling on 1 SRVs is normal following a full scram. 926 psig-1063 psig represents the normal cycling range for the SRV with the lowest open/close setpoints.
B. EOP-0001 entry is required at 1094.7 psig which has been exceeded since LLS is active (based on range of pressure cycling) LLS is actuated at 1133 psig.”
C. AOP 1 & 2 are applicable because both a scram has occurred due to a CV fast closure which is a turbine trip. EOP entry is required. See “B”
D. EOP entry is required. See “B”.

Technical Reference(s): AOP-0001, AOP-0002, EOP-0001, R-STM-0109

Proposed references to be provided to applicants during examination: NA

Learning Objective: RLP-OPS-HLO-520 Obj 2; RLP-OPS-HLO-521 Obj 3; R-STM-0109 Obj 4; RLP-OPS-HLO-512 Obj 3

Question Source: New

Question History: Last NRC Exam NA

Cognitive Level: Memory or Fundamental Knowledge ☐ Comprehension or Analysis ☑3

10 CFR Part 55 Content: 55.43.b5

Comments:

QUESTION 79 Rev 0

Examination Outline Cross-Reference:	Level		RO ☐	SRO ☑
	Tier #	1	Group # 1	
	K/A #	295021 AA2.07		IR 3.1

Ability to determine and interpret reactor recirculation flow as it applies to loss of shutdown cooling.

Proposed Question:

The following plant conditions exist:

- Mode 4
- RHR “A” is in Shutdown Cooling Mode
- RHR “B” is available
- Reactor Recirculation Pump “A” is in service
- Reactor Recirculation Pump “B” is tagged out
- Reactor Water Cleanup System is tagged out

If RHR “A” trips, (1) which of the following procedures is required and (2) which of the following lists the appropriate device to use for RPV temperature monitoring prior to additional operator action being taken?

A. (1) AOP-0051, LOSS OF DECAY HEAT REMOVAL; (2) E12-R601 Point 1, RHR “A” Heat Exchanger Inlet

B. (1) STP-050-0700, RCS PRESSURE/TEMPERATURE LIMITS VERIFICATION; (2) B33-R604 Point 1 Recirc Pump “A” Suction

C. (1) OSP-0041, ALTERNATE DECAY HEAT REMOVAL; (2) E12-R601 Point 2, RHR “B” Heat Exchanger Inlet

D. (1) AOP-0020, ALTERNATE METHOD OF DECAY HEAT REMOVAL; (2) G33-R607 Point 3 Regenerative Heat Exchanger Inlet

Proposed Answer: B.

Explanation:
A. Although this procedure is appropriate, the temperature monitoring device is not because there is no flow through the section of pipe where the device is located therefore it is not reliable temperature indication.
B. Correct – STP-050-0700 is required to monitor the vessel heat up and cooldown once a method of shutdown cooling is restored. The appropriate temp monitoring device is B33-R604 since of the options given, it is the only one which has flow through that section of pipe (Reactor Recirc “A” in service).
C. Although this procedure is appropriate, the temperature monitoring device is not because there is no flow through the section of pipe where the device is located therefore it is not reliable temperature indication.
D. AOP-0020 involves main steam line flooding and is only used if all other decay heat removal methods are unavailable. As indicated in the stem, RHR “B” can be aligned for Shutdown Cooling. The given point was also not be reliable since RWCU is not inservice.

Technical Reference(s): STP-050-0700

Proposed references to be provided to applicants during examination: NA

Learning Objective: RLP-HLO-543 Obj 3

Question Source: New Question History: Last NRC Exam NA

Cognitive Level: Memory or Fundamental Knowledge ☐ Comprehension or Analysis ☑3

10 CFR Part 55 Content: 55.43.b5 Comments:

QUESTION 80 Rev 0

Examination Outline Cross-Reference:	Level		RO ☐	SRO ☑
	Tier #	1	Group #	1
	K/A #	295025 EA2.04		IR 3.9

Ability to determine and interpret suppression pool level as it applies to high reactor pressure.

Proposed Question:

During an ATWS, the following conditions exist:

- RPV Level -110 inches
- RPV Pressure 1000 psig
- Sup Pool Level 19 feet 4 inches
- Sup Pool Temp 130°F

Which of the following procedures should the CRS execute and why?

A. Per EOP-0001A, execute Emergency Depressurize - ATWS and Emergency Depressurization –ATWS Level Control to preclude the failure of containment and equipment in the containment that may be needed for safe shutdown of the plant.

B. Per EOP Enclosure 30, SUPPRESSION POOL MAKEUP provide makeup to the suppression pool to ensure adequate pressure suppression function of containment.

C. Per SOP-0031, RESIDUAL HEAT REMOVAL maximize suppression pool cooling to maintain containment peak pressure and temperature below design limits.

D. Per EOP-0001A, lower reactor pressure to preclude the failure of containment and equipment in the containment that may be needed for safe shutdown of the plant without exceeding a 100°F per hour cooldown rate.

Proposed Answer: A.

Explanation:
A. Utilizing EOP Figure 2 –Heat Capacity Temperature Limit curve, it is determined that the given conditions are in the UNSAFE zone of the HCTL. EOP-0002, step SPT-6 requires Emergency Depressurization. The bases indicate that ED is required to preclude the failure of containment and equipment in containment that may be needed for safe shutdown of the plant.
B, C, D – These 3 distractors are all viable options for combating the conditions prior to determining that parameters can not be maintained in the SAFE zone of HCTL, but once the UNSAFE zone is reached, ED is required.

Technical Reference(s): EOP-0002, EPSTG-0002

Proposed references to be provided to applicants during examination: EOP Figure 2 HCTL

Learning Objective: RLP-HLO-514 Obj 6

Question Source: New

Question History: Last NRC Exam NA

Cognitive Level: Memory or Fundamental Knowledge ☐ Comprehension or Analysis ☑3

10 CFR Part 55 Content: 55.43.b5 Comments:

QUESTION 81 Rev 0

Examination Outline Cross-Reference:	Level		RO ☐	SRO ☑
	Tier #	1	Group # 1	
	K/A #	295028 G.2.4.6		IR 4.7

Knowledge of EOP mitigation strategies regarding high drywell temperature.

Proposed Question:

The following conditions exist:

- RPV Level 18 inches
- RPV Pressure 800 psig
- Drywell Temp 148°F
- Drywell Pressure 1.8 psid

Which of the following should the CRS direct?

A. EOP Enclosure 20, DEFEATING DRYWELL COOLING ISOLATION INTERLOCKS to maximize drywell cooling and bypass interlocks as necessary.

B. SOP-0059, CONTAINMENT HVAC SYSTEM to isolate Service Water (SWP) and align Chilled Water (HVN) to the drywell unit coolers.

C. SOP-0059, CONTAINMENT HVAC SYSTEM to initiate drywell purge for pressure control.

D. SOP-0060, DRYWELL COOLING to start 6 drywell unit coolers. Bypassing of interlocks is <u>NOT</u> authorized.

Proposed Answer: A.

Explanation:
A. Correct – This action is directed by EOP-0002 Step DWT-3 since DW temperature is >145°F.
B. This lineup is used in outage conditions for personnel comfort, but is not an EOP mitigation strategy for high drywell temperature.
C. Drywell purge is not authorized in Modes 1, 2 and 3. Additionally, this lineup is not an EOP mitigation strategy for high drywell pressure.
D. SOP-0060 does not authorize starting a 6th drywell cooler during normal operation. It does however direct use of the 6th cooler per EOP-0002 during emergency conditions. During emergency conditions (>145°F) bypassing of interlocks is authorize (Enclosure 20).

Technical Reference(s): EOP-0002, Enclosure 20

Proposed references to be provided to applicants during examination: NA

Learning Objective: RLP-HLO-514 Obj 6

Question Source: New

Question History: Last NRC Exam NA

Cognitive Level: Memory or Fundamental Knowledge ☐ Comprehension or Analysis ☑3

10 CFR Part 55 Content: 55.43.b5 Comments:

QUESTION 82 Rev 0

Examination Outline Cross-Reference:	Level		RO ☐	SRO ☑
	Tier #	1	Group # 1	
	K/A #	295030 G2.2.37		IR 4.6

Ability to determine operability and/or availability of safety related equipment regarding Low Suppression Pool Water Level.

Proposed Question:

Consider the following plant conditions:

Mode 5, cavity level 24 feet above the fuel assemblies seated in the RPV

Sup Pool Level 13 feet 0 inches
CST Level 20 feet 8 inches
High Pressure Core Spray (HPCS) in standby lineup
Low Pressure Core Spray (LPCS) in standby lineup

What, if any, are the operability concerns with the above conditions?

A. No operability concern exists. Suppression Pool Level limit Tech Spec is only applicable in Modes 1, 2, and 3.

B. No operability concern exists. ECCS is not required in the current mode.

C. Both LPCS and HPCS are INOPERABLE

D. LPCS is INOPERABLE, HPCS is OPERABLE

Proposed Answer: D.

Explanation:
A. While it is correct that the SP Level TS only applies in Modes 1,2, and 3, other operability issues are presented in the stem. See “D”.
B. ECCS is not required in Mode 5 if level is >23 feet above the RPV flange. The stem condition states that level is 24 feet above the fuel assemblies in the RPV. Additionally, no mention is made of the status of the pool gates. The gates must also be open to achieve a condition where ECCS is not required.
C. See “D”.
D. Correct - LPCS is inoperable due to SP level being <13 feet, 3 inches. HPCS, however remains operable due to CST level being >11 feet 1 inch.

Technical Reference(s): TS 3.5.2 ECCS – Shutdown, TS 3.6.2.2 Sup Pool Level

Proposed references to be provided to applicants during examination: TS 3.5.2 & TS 3.6.2.2

Learning Objective: RLP-STM-0203 Obj 14; RLP-STM-0205 Obj 12

Question Source: New

Question History: Last NRC Exam NA

Cognitive Level: Memory or Fundamental Knowledge ☐ Comprehension or Analysis ☑4

10 CFR Part 55 Content: 55.43.b2

Comments:

QUESTION 83 Rev 0

Examination Outline Cross-Reference: Level RO ☐ SRO ☑
Tier # 1 Group # 2
K/A # 295002 AA2.01 IR 3.1

Ability to determine and interpret condenser vacuum/absolute pressure as it applies to loss of main condenser vacuum.

Proposed Question:

The following plant conditions exist:

- Reactor Power 100%
- RPV Level 36 inches
- RPV Press 1050 psig
- Condenser Vac 24"Hg
- IAS Header Press 118 psig
- CCP Header Press 108 psig
- CCS Header Press 113 psig

Which of the following procedures is appropriate for these conditions?

A. AOP-0005, LOSS OF MAIN CONDENSER VACUUM

B. AOP-0008, LOSS OF INSTRUMENT AIR

C. AOP-0011, LOSS OF REACTOR PLANT COMPONENT COOLING WATER

D. AOP-0012, LOSS OF TURBINE PLANT COMPONENT COOLING WATER

Proposed Answer: A.

Explanation:
A. Correct – Condenser vacuum is lower than normal. AOP-0005 is appropriate.
B. IAS header pressure is in the normal range.
C. CCP header pressure is in the normal range.
D. CCS header pressure is in the normal range.

Technical Reference(s): AOP-0005

Proposed references to be provided to applicants during examination: NA

Learning Objective: RLP-HLO-524 Obj 2

Question Source: New

Question History: Last NRC Exam NA

Cognitive Level: Memory or Fundamental Knowledge ☐ Comprehension or Analysis ☑3

10 CFR Part 55 Content: 55.43.b5

Comments:

QUESTION 84 Rev 0

Examination Outline Cross-Reference:	Level		RO ☐	SRO ☑	
	Tier #	1	Group # 2		
	K/A #	295011 AA2.01			IR 3.9

Ability to determine and interpret containment temperature as it applies to high containment temperature.

Proposed Question:

The crew has just completed the immediate actions of AOP-0001, Reactor Scram and entry into EOP-0001, RPV Control following a high drywell pressure condition. The following plant conditions exist:

- Containment Temp 180°F, rising 3°F/minute
- Suppression Pool level 19 feet 10 inches
- Suppression pool temp 102°F
- RPV level 5 inches
- RPV pressure 800 psig
- All available containment cooling is in operation
- Inboard MSIVs are CLOSED
- Suppression pool cooling is operating

Based on the above, the SRO should ________________.

A. Continue in EOP-0001 and rapidly depressurize the reactor using bypass valves without regard to cooldown rate.

B. Enter EOP-0001, Emergency Depressurization and rapidly depressurize the reactor with SRVs.

C. Continue in EOP-0001 and install Enclosure 9 to reopen the MSIVs

D. Continue in EOP-0001 and depressurize the reactor using SRVs maintaining the cooldown rate less than 100°F.

Proposed Answer: B.

Explanation:
A. This distractor describes “anticipating Emergency Depressurization”. Anticipating ED is only allowed when the MSIVs are open.
B. Correct – Based on the given conditions, Containment Temperature can not be maintained below 185°F, so ED is required. 185°F does not have to be exceeded to make this determination.
C. Enclosure 9 is only authorized when SRVs can not be opened and ED is required.
D. Continuing to depressurize to the suppression pool will make containment conditions worst, so the CRS should make the determination as described in “B”.

Technical Reference(s): EOP-0001, EOP-0002

Proposed references to be provided to applicants during examination: NA

Learning Objective: RLP-HLO-512 Obj 7; RLP-HLO-514 Obj 6

Question Source: Modified Bank # From 2007 NRC Exam #80

Question History: Last NRC Exam NA

Cognitive Level: Memory or Fundamental Knowledge ☐ Comprehension or Analysis ☑4

10 CFR Part 55 Content: 55.43.b5 Comments:

QUESTION 85 Rev 0

Examination Outline Cross-Reference:	Level		RO ☐	SRO ☑
	Tier #	1	Group #	2
	K/A #	295035 G2.4.45		IR 4.3

Ability to prioritize and interpret the significance of each annunciator or alarm relative to secondary containment high differential pressure.

Proposed Question:

The unit operator is securing Standby Gas Treatment and starting Auxiliary Building normal ventilation. During the evolution, the following alarm is received in the Main Control Room on H13-P863/72A/A01:

- ANNULUS PRESSURE HIGH

Which of the following should be entered?

A. EOP-0003, Secondary Containment and Radioactive Release Control immediately. An entry condition has been met.

B. Technical Specification 3.6.4.1.- Secondary Containment – Operating. Secondary Containment is inoperable.

C. STP-000-0201, Monthly Operating Logs, to determine Secondary Containment operability.

D. ARP-P863-72 Alarm Response Procedure to determine annulus pressure relative to the environment before taking further actions.

Proposed Answer: D.

Explanation:
A. The EOP bases state that the operator is expected to check the pressure indication in the MCR to determine if there has been a gross failure or obvious problem with the annulus before making the decision to enter EOP-0003. With the evolution in progress, the operator should determine actual annulus pressure prior to entry.
B. See “D”.
C. See “D”.
D. Correct – Prior to taking action to enter further procedures or Tech Specs, the CRS requires knowledge of actual annulus pressure. Annulus pressure is sensed relative to the Auxilary Building, so any actions taken to lower Auxilary Building pressure will be detected as rising annulus pressure even though annulus pressure may be constant. The ARP listed provides guidance on the method of determining actual annulus pressure.

Technical Reference(s): ARP-P863/72A/A01, EOP Bases

Proposed references to be provided to applicants during examination: NA

Learning Objective: RLP-HLO-515 Obj 3

Question Source: New

Question History: Last NRC Exam NA

Cognitive Level: Memory or Fundamental Knowledge ☐ Comprehension or Analysis ☑4

10 CFR Part 55 Content: 55.43.b5 Comments:

QUESTION 86 Rev 0

Examination Outline Cross-Reference:	Level		RO ☐	SRO ☑
	Tier #	2	Group # 1	
	K/A #	215003 A2.03		IR 3.1

Ability to (a) predict the impact of a stuck detector on the IRMs and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of that abnormal operation.

Proposed Question:

During a startup per GOP-0001, Plant Startup, the IRMs are being withdrawn. The ATC operator reports that IRM "A" has failed to retract.

(1) What is the impact of the stuck detector and (2) which procedure should the CRS direct to mitigate this condition?

A. (1) IRM upscale rod block prevents further power ascension, (2) SOP-0074, Neutron Monitoring to bypass the detector.

B. (1) Detector burnout due to high flux; (2) SOP-0074, Neutron Monitoring System to de-energize the detector.

C. (1) IRM upscale rod block prevents further power ascension; (2) GOP-0001, Plant Startup to de-energize the detector.

D. (1) Detector burnout due to high flux; (2) GOP-0001, Plant Startup to bypass the detector.

Proposed Answer: B.

Explanation:
A. IRMs are removed from the core after the Mode Switch is in RUN. At this point, IRM trips are bypassed.
B. Correct – IRMs are not maintained in the core during power operation because they will be rapidly deplete in the high flux environment. The detector is de-energize to minimize this condition until it can be retracted.
C. See "A"/
D. First half is correct, but procedure gives guidance to de-energize also. There are no trips to bypass since Mode switch is in RUN.

Technical Reference(s): SOP-0074

Proposed references to be provided to applicants during examination: NA

Learning Objective: RLP-STM-0503 Obj 10, 13, 37

Question Source: New

Question History: Last NRC Exam NA

Cognitive Level: Memory or Fundamental Knowledge ☐ Comprehension or Analysis ☑3

10 CFR Part 55 Content: 55.43.b5

Comments:

QUESTION 87 Rev 0

Examination Outline Cross-Reference:	Level		RO ☐	SRO ☑
	Tier #	2	Group #	1
	K/A #	217000 A2.03		IR 3.3

Ability to (a) predict the impact of valve closures on RCIC and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of that abnormal operation.

Proposed Question:

Following a plant transient, RCIC is providing makeup to the RPV.
Suppression Pool temperature is 135°F.
E51-F010, RCIC PUMP CST SUCTION VALVE has just isolated due to high suppression pool level.

(1) What is the impact of this condition and (2) what, if any, procedure should be utilized to mitigate the condition?

A. (1) RCIC will experience higher operating temperatures due to its suction being aligned to the suppression pool. (2) Use SOP-0035 to align back to the CST by overriding E51-F031, RCIC SUPPRESSION POOL SUCTION VALVE CLOSED and E51-F010, RCIC CST SUCTION VALVE OPEN.

B. (1) RCIC pump trips on low suction pressure. (2) Use SOP-0035 to reset RCIC.

C. (1) RCIC will experience higher operating temperatures due to its suction being aligned to the suppression pool. (2) Use EOP Enclosure 3 to bypass interlocks and align RCIC suction back to the CST.

D. (1) No impact. The suppression pool is the preferred suction source. (2) No further action is required.

Proposed Answer: C.

Explanation:
A. . See “C”.
B. . See “C”.
C. Correct – The condition which causes E51-F010 to close, also causes E51-F031 to open aligning RCIC suction to the Sup Pool so no loss of suction will occur. The high temp in the Sup Poll will cause the heating up of RCIC components as RCIC cooling is provided from the pump discharge. The preferred source is the CST for this reason. EOP Enclosure 3 provides for bypassing of interlocks to realign the suction back to the CST. These interlocks can not be manually overridden as HPCS can.
D. See “C”.

Technical Reference(s): EOP Bases

Proposed references to be provided to applicants during examination: NA

Learning Objective: RLP-STM-0209 Obj 3, 5, 11, 12, 13, 14; RLP-HLO-516 Obj 1

Question Source: New

Question History: Last NRC Exam NA

Cognitive Level: Memory or Fundamental Knowledge ☐ Comprehension or Analysis ☑3

10 CFR Part 55 Content: 55.43.b5 Comments:

QUESTION 88 Rev 0

Examination Outline Cross-Reference:	Level		RO ☐	SRO ☑	
	Tier #	2	Group #	1	
	K/A #	259002 A2.03			IR 3.7

Ability to (a) predict the impact of a loss of reactor water level input on the Reactor Water Level Control system and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of that abnormal operation.

Proposed Question:

With the plant operation at 100% power, the Feedwater Level Control System is selected to the "A" channel level input.

(1) What is the impact of the selected channel failing downscale and (2) which procedure should the CRS select to mitigate the condition?

A. (1) Reactor water level rises. (2) AOP-0006, CONDENSATE AND FEEDWATER FAILURES to take manual control of reactor water level.

B. (1) Reactor water level rises. (2) SOP-0009, REACTOR FEEDWATER SYSTEM to select the "B" channel as input to Feedwater Level Control.

C. (1) Reactor water level lowers. (2) AOP-0006, CONDENSATE AND FEEDWATER FAILURES to take manual control of reactor water level.

D. (1) Reactor water level lowers. (2) SOP-0009, REACTOR FEEDWATER SYSTEM to select the "B" channel as input to Feedwater Level Control.

Proposed Answer: A.

Explanation:
A. Correct – The level input failing downscale will be sensed as lowering water level the FWLC system will attempt to remedy the situation by sending an open signal to the Feedwater Regulating Valves causing actual level to rise. Level will continue to rise until action is taken. The action required is directed by AOP-0006. The immediate action is to take manual control of the system to control level.
B. Using SOP-0009 to select an unaffected channel would be appropriate long term, but during the transient, responding with the AOP actions is the correct course of action.
C. See "A" & "B".
D. See "A" & "B".

Technical Reference(s): AOP-0006, R-STM-0107

Proposed references to be provided to applicants during examination: NA

Learning Objective: RLP-STM-0107 Obj 4, 5; RLP-HLO-0525 Obj 2, 4, 5

Question Source: New

Question History: Last NRC Exam NA

Cognitive Level: Memory or Fundamental Knowledge ☐ Comprehension or Analysis ☑3

10 CFR Part 55 Content: 55.43.b5

Comments:

QUESTION 89 Rev 0

Examination Outline Cross-Reference:	Level		RO ☐	SRO ☑
	Tier #	2	Group #	1
	K/A #	261000 G2.2.25		IR 4.2

Knowledge of the bases in Technical Specifications for limiting conditions for operations and safety limits.

Proposed Question:

When one train of Standby Gas Treatment (SGT) is inoperable, Technical Specification 3.6.4.3 requires verification within 4 hours that the OPERABLE SGT subsystem is not operating in the primary containment purge flowpath.

What is the bases for this required action?

A. To ensure that both SGT subsystems are not damaged should a primary containment pressurization event occur.

B. The operable train will not be aligned in its safety function alignment when in the containment purge flowpath.

C. The 24 inch containment purge dampers are not designed to shut in accident conditions.

D. To reduce the runtime on the charcoal adsorber, to conserve iodine removal capability.

Proposed Answer: A.

Explanation:
A. Correct – If one train of SGT is inoperable and the operable train is aligned to containment, a LOCA event could damage the operable train by overpressurization. With no operable train, a loss of safety function would exist.
B. If a LOCA signal is received, the operable train would automatically align to perform its safety function.
C. The 24 inch containment dampers are containment isolation valves and will isolate during accident conditions.
D. The runtime is not the concern if so, the action would state secure the train from any alignment (not just the containment purge flowpath).

Technical Reference(s): TS 3.6.4.3 & TS3.6.1.3 Bases (Specifically, the Bases for NOTE 3 of 3.6.1.3).

Proposed references to be provided to applicants during examination: NA

Learning Objective: RLP-STM-0257 Obj 9

Question Source: New

Question History: Last NRC Exam NA

Cognitive Level: Memory or Fundamental Knowledge ☐ Comprehension or Analysis ☑3

10 CFR Part 55 Content: 55.43.b2

Comments:

QUESTION 90 Rev 0

Examination Outline Cross-Reference:	Level		RO ☐	SRO ☑
	Tier #	2	Group #	1
	K/A #	400000 G2.2.44		IR 4.4

Ability to interpret control room indications to verify the status and operation of a system, and understand how operator actions and directives affect plant and system conditions.

Proposed Question:

The plant has experienced an ATWS. During the transient, the following was observed:

- Div 1 RPCCW LOW PRESSURE lights (4) all illuminated
- Div 2 RPCCW LOW PRESSURE lights (4) all illuminated

(1) What can be determined by this indication and (2) what procedure actions can be performed to mitigate the ATWS condition?

A. (1) A loss of cooling to the Reactor Recirculation pumps has occurred due to the isolation of CCP to containment. (2) Utilize AOP-0011 to align Service Water to the containment for Reactor Recirculation Pump restart to promote boron mixing.

B. (1) A loss of cooling to the Reactor Recirculation pumps has occurred due to the isolation of the CCP to containment. (2) Maintain the Reactor Recirculation pumps tripped in accordance with EOP-0001A.

C. (1) A loss of Control Rod Drive pumps has occurred due to the isolation of the CCP safety related loops. (2) Utilize SOP-0002, Control Rod Drive System, to provide Alternate CRD cooling with CNS.

D. (1) A loss of Control Rod Drive pumps has occurred due to the isolation of the CCP safety related loops. (2) Utilize AOP-0011 to align Service Water to the CCP header to restart CRD pumps for control rod insertion.

Proposed Answer: D.

Explanation:
A. Lights indicate isolation of safety related loops which causes loss of CRD. AOP-11 provides guidance to align SWP to safety loops not Containment.
B. Lights indicate isolation of safety related loops which causes loss of CRD. If power is >5%, maintaining Recirc secured is correct.
C. Part 1 is correct. Use of CNS alternate cooling is for cool shutdown conditions during maintenance.
D. Correct – Lights indicate isolation of safety related loops which causes loss of CRD. AOP-0011 provides method of aligning SWP to safety loops to restore CRD which will aid in rod insertion during the ATWS.

Technical Reference(s): AOP-0011, R-STM-0115

Proposed references to be provided to applicants during examination: NA

Learning Objective: RLP-STM-0115 Obj 2, 4, 5, 9, 11; RLP-HLO-530 Obj 5, 6

Question Source: New

Question History: Last NRC Exam NA

Cognitive Level: Memory or Fundamental Knowledge ☐ Comprehension or Analysis ☑3

10 CFR Part 55 Content: 55.43.b5 Comments:

QUESTION 91 Rev 0

Examination Outline Cross-Reference:	Level		RO ☐	SRO ☑
	Tier #	2	Group # 2	
	K/A #	234000 K6.03		IR 3.6

Knowledge of the effect that a loss or malfunction of RC & IS will have on Fuel Handling Equipment.

Proposed Question:

During a refueling outage, with all control rods fully inserted, the ATC reports that the expected control room annunciation was not received when the loaded refueling platform moved over the core.

Which of the following should the CRS enter?

A. AOP-0027, Fuel Handling Mishaps

B. Technical Specification 3.9.1 – Refueling Equipment Interlocks

C. Technical Specification 3.9.2 – Refueling Position One Rod Out Interlock

D. Technical Requirement Manual TR 3.9.12 – Refueling Platform

Proposed Answer: B.

Explanation:
A. AOP-0027 is written for dropped or damage bundles, or loss of pool inventory. Not for malfunctioning of interlocks.
B. The annunciator which should have been received when the bridge moves over the core loaded is “Control Rod Withdrawal Block”. This interlock is required by TS 3.9.1 which should be entered.
C. This TS is for the one rod interlock. The stem give no indication that this TS is not met.
D. The surveillances in TR 3.9.12 do not contain the requirements associated with generation of a rod block when the loaded platform moves over the core.

Technical Reference(s): R-STM-0055, TS 3.9.1

Proposed references to be provided to applicants during examination: NA

Learning Objective: RLP-STM-0055 Obj 9

Question Source: New

Question History: Last NRC Exam NA

Cognitive Level: Memory or Fundamental Knowledge ☐ Comprehension or Analysis ☑3

10 CFR Part 55 Content: 55.43.b2

Comments:

QUESTION 92 Rev 0

Examination Outline Cross-Reference:	Level		RO ☐	SRO ☑	
	Tier #	2	Group # 2		
	K/A #	272000 G2.4.50			IR 4.0

Ability to verify system alarm setpoints and operate controls identified in the alarm response manual.

Proposed Question:

The Auxiliary Building Ventilation System and Annulus Pressure Control Systems are in their normal lineups when RMS-RE110, AUXILIARY BUILDING VENTILATION goes into HIGH alarm.

(1) How does this condition affect system operation and (2) what procedure actions should the CRS direct?

A. (1) Standby Gas Treatment is running, but the Auxiliary Building is not isolated. (2) IF a primary system is leaking into Secondary Containment, THEN isolate the Auxiliary Building per ARP-RMS-DSPL230.

B. (1) Standby Gas Treatment is running and Auxiliary Building is isolated (2) Verify system isolations in accordance with AOP-0003, Automatic Isolations.

C. (1) Alarm only. No change in system lineup. (2) Perform ARP-RMS-DSPL230 actions to isolate the Auxiliary Building and align the Annulus and Auxiliary Building to Standby Gas Treatment.

D. (1) Alarm only. No change in system lineup. (2) IF a primary system is leaking into Secondary Containment, THEN perform AOP-0003, Automatic Isolations, actions to isolate the Auxiliary Building and align the Annulus and Auxiliary Building to Standby Gas Treatment.

Proposed Answer: C.

Explanation:
A. No actions occur. Action to isolate the annulus and auxiliary bldg and start standby gas treatment must be performed in accordance with ARP.
B. See "A".
C. Correct – No automatic actions occur other than audible annunciation. ARP guidance requires isolation of the auxiliary building and alignment of the annulus and auxiliary building to standby gas treatment. Verification of a primary system discharging into secondary containment does not determine whether or not isolation should occur.
D. See "C".

Technical Reference(s): ARP-RMS-DSPL230; R-STM-409

Proposed references to be provided to applicants during examination: NA

Learning Objective: RLP-STM-0409 Obj 2, 4, 6, 7, 8, 9

Question Source: New

Question History: Last NRC Exam NA

Cognitive Level: Memory or Fundamental Knowledge ☐ Comprehension or Analysis ☑3

10 CFR Part 55 Content: 55.43.b5 Comments:

QUESTION 93 Rev 0

Examination Outline Cross-Reference:	Level		RO ☐	SRO ☑
	Tier #	2	Group # 2	
	K/A #	290002 G2.2.40		IR 4.7

Ability to apply Technical Specifications to Reactor Vessel Internals

Proposed Question:

Following the performance of the daily jet pump surveillance procedure, the unit operator reports that the acceptance criteria were not met.

Which of the following describes the actions required by Technical Specifications for an inoperable jet pump?

A. Be in Mode 3 within 12 hours.

B. Take action within 1 hour to be in Mode 2 within 7 hours, Mode 3 within 13 hours, and Mode 4 within 37 hours.

C. Place the mode switch in shutdown immediately.

D. Shutdown the recirculation loop with the inoperable jet pump within 2 hours. Continue to operate in Single Loop Operation.

Proposed Answer: A.

Explanation:
A. Correct - TS 3.4.3 requires the plant to be in Mode 3 within 12 hours if one or more jet pumps is inoperable.
B. This describes the actions of LCO 3.0.3 which is not applicable.
C. TS 3.4.3 does not require an immediate shutdown. 12 hours is reasonable based on operating experience to reach Mode 3 from full power in an orderly manner without challenging plant systems.
D. This describes the action for loop flow mismatch which may be applicable depending on the degree/type of jet pump failure. Continued operation in single loop is not allowed however.

Technical Reference(s): Technical Specification 3.4.3

Proposed references to be provided to applicants during examination: NA

Learning Objective: None identified.

Question Source: New

Question History: Last NRC Exam NA

Cognitive Level: Memory or Fundamental Knowledge ☑4 Comprehension or Analysis ☐

10 CFR Part 55 Content: 55.43.b2

Comments:

QUESTION 94 Rev 0

Examination Outline Cross-Reference:	Level		RO ☐	SRO ☑
	Tier #	3	Group #	1
	K/A #	G.2.1.7		IR 4.7

Ability to evaluate plant performance and make operational judgments based on operating characteristics, reactor behavior, and instrument interpretation.

Proposed Question:

While operating at 100% power, a transient occurred resulting in the following:

Reactor Power	102%
Feedwater Temp	425°F
Core Flow	83.5 Mlbm/hr
Flow Control Valves	unchanged from pre-transient position

Which of the following procedures provides appropriate guidance for these conditions?

A. AOP-0007, LOSS OF FEEDWATER HEATING

B. AOP-0024, THERMAL HYDRAULIC INSTABILITY CONTROL

C. AOP-0061, MISPOSITIONED CONTROL ROD

D. AOP-0064, JET PUMP FAILURES

Proposed Answer: C.

Explanation:
A. Feedwater temperature is normal for 100% power.
B. Reactor recirculation parameters are normal.
C. Correct – The only abnormal parameter is reactor power. The only methods of raising power are raising reactor recirculation flow, repositioning control rods, or a reduction in feedwater temperature. Recirculation FCVs are at pre-transient position, feedwater temperature is normal, so a control rod has moved. The transient was due to a control rod drop accident, therefore AOP-0061 is the required procedure.
D. Although a jet pump failure can affect reactor power, these failures cause reactor power to lower.

Technical Reference(s): AOP-0061

Proposed references to be provided to applicants during examination: NA

Learning Objective: RLP-OPS-HLO-549 Obj 2

Question Source: New

Question History: Last NRC Exam NA

Cognitive Level: Memory or Fundamental Knowledge ☐ Comprehension or Analysis ☑3

10 CFR Part 55 Content: 55.43.b5

Comments:

QUESTION 95 Rev 0

Examination Outline Cross-Reference:	Level		RO ☐	SRO ☑
	Tier #	3	Group #	1
	K/A #	G.2.1.25		IR 4.2

Ability to interpret reference materials, such as graphs, curves, tables, etc.

Proposed Question:

Consider the following conditions:

- Mode 4
- RPV Level 85 inches
- Time after shutdown 48 hours
- Reactor Water Temp 90°F
- RHR "A" Shutdown Cooling Operating
- RHR "B" Shutdown Cooling Standby

Subsequent to the above conditions, RHR "A" pump trips.

(1) What is the appropriate procedure for this condition and (2) approximately how long before a mode change occurs?

A. (1) AOP-0020, Alternate Decay Heat Removal Method; (2) 60 minutes

B. (1) AOP-0020, Alternate Decay Heat Removal Method; (2) 74 minutes

C. (1) AOP-0051, Loss of Decay Heat Removal; (2) 60 minutes

D. (1) AOP-0051, Loss of Decay Heat Removal; (2) 74 minutes

Proposed Answer: D.

Explanation:
A. AOP-0020 provides guidance for flooding the main steam lines as an alternate method of decay heat removal. It should only be used when no other method of decay heat removal is available. 60 minutes is incorrect, but plausible because if the performer fails to use the required multiplier, the time to 200°F is 60 minutes.
B. Incorrect procedure. Time to 200°F is correct.
C. Correct procedure, Incorrect time.
D. AOP-0051 provides guidance for a trip of the shutdown cooling. Utilizing Attachment 9 of OSP-0037 and the given conditions above, it can be determined that the time to 200°F is ~74 minutes

Technical Reference(s): AOP-0051, OSP-0037

Proposed references to be provided to applicants during examination: OSP-0037 Graphs

Learning Objective: None identified.

Question Source: New

Question History: Last NRC Exam NA

Cognitive Level: Memory or Fundamental Knowledge ☐ Comprehension or Analysis ☑3

10 CFR Part 55 Content: 55.43.b5

Comments:

QUESTION 96 Rev 0

Examination Outline Cross-Reference:	Level		RO ☐	SRO ☑
	Tier #	3	Group #	2
	K/A #	G.2.2.43		IR 3.3

Knowledge of the process used to track inoperable alarms.

Proposed Question:

A Main Control Room annunciator has been frequently lighting and clearing, and has become a distraction to the operating crew. The alarm has been verified to be invalid.

Which of the following procedures should the CRS refer to rectify this issue?

A. OSP-0015, Problem Annunciator Resolution Program

B. AOP-0055, Loss of Control Room Annunciators

C. EN-OP-115, Conduct of Operations

D. OSP-0022, Operations General Administrative Guidelines

Proposed Answer: A.

Explanation:
A. Correct – OSP-0015 states as its purpose… “to provide guidance for the resolution and tracking of annunciator problems that are masking valid information, providing incorrect alarm information, or are classified as a nuisance annunciator.” The situation described in the stem is a nuisance annunciator as defined in OSP-0015.
B. The abnormal procedure provides guidance in the event that ALL main control room annuncitors are lost.
C. EN-OP-115 provides guidance on annunciator response. With regard to nuisance annunciators, this fleet procedures refers to the “appropriate site procedure” which is OSP-0015.
D. Although OSP-0022 does mention the use of compensatory measures or frequency of monitoring of equipment with faulty annunciators, it does not give guidance regarding the process of tracking and restoring the faulty annunciator.

Technical Reference(s): OSP-0015

Proposed references to be provided to applicants during examination: NA

Learning Objective: None identified.

Question Source: New

Question History: Last NRC Exam NA

Cognitive Level: Memory or Fundamental Knowledge ☑2 Comprehension or Analysis ☐

10 CFR Part 55 Content: 55.43.b5

Comments:

QUESTION 97 Rev 0

Examination Outline Cross-Reference:	Level		RO ☐	SRO ☑
	Tier #	3	Group #	3
	K/A #	G.2.3.14		IR 3.8

Knowledge of radiation or contamination hazards that may arise during normal, abnormal, or emergency conditions or activities.

Proposed Question:

Of the plant startup activities listed below, which one will cause a significant rise in radiological dose rates in the General Areas of the Turbine Building?

A. Placing Heater Drain Pumps in Pump Forward mode

B. Placing a Condensate Demineralizer in Recycle mode

C. Admission of steam into the Main Condenser

D. Placing Hydrogen Water Chemistry System in service

Proposed Answer: D.

Explanation:
A. See “D”.
B. See “D”.
C. See “D”.
D. Of the choices listed, placing HWC inservice will cause the most significant change in dose rate due to increased carryover of N16 in the steam. With increased levels of Hydrogen in the vessel, the N16 bonds with the Hydrogen to create ammonia which is more likely to be carried over with the steam. Without HWC in service the N16 bonds with oxygen to create water soluble nitrates and nitrites which are removed by RWCU. Although the rate of N16 production is not affected by HWC, the carryover rate is increased causing elevated dose rates in the Turbine Bldg.

Technical Reference(s): R-STM-0127

Proposed references to be provided to applicants during examination: NA

Learning Objective: RBS-1-LEC-LP-H0127 Obj 9

Question Source: New

Question History: Last NRC Exam NA

Cognitive Level: Memory or Fundamental Knowledge ☐ Comprehension or Analysis ☑2

10 CFR Part 55 Content: 55.43.b4

Comments:

QUESTION 98 Rev 0

Examination Outline Cross-Reference:	Level		RO ☐	SRO ☑
	Tier #	3	Group #	3
	K/A #	G.2.3.6		IR 3.8

Ability to approve release permits

Proposed Question:

Which of the following procedures would the CRS utilize to <u>approve</u> the release of radioactive effluents to the Mississippi River?

A. ADM-0042, CONDUCT OF CHEMISTRY

B. ADM-0054, RADIOACTIVE LIQUID EFFLUENT BATCH DISCHARGE;

C. SOP-0108, LIQUID RADWASTE COLLECTION AND PROCESSING;

D. SOP-0113, LIQUID RADWASTE PROCESSING/RECOVERY SAMPLE SYSTEM

Proposed Answer: B.

Explanation:
A. ADM-0042 provides general administrative guidance for the chemistry department.
B. Correct – Liquid Radwaste discharge permit approvals are performed per ADM-0054.
C. SOP-0108 is a system operating procedure for the radwaste collection and processing system.
D. SOP-0113 is a system operating procedure for the discharging LWS tanks to the river, but does not contain permit approval requirements.

Technical Reference(s): ADM-0054

Proposed references to be provided to applicants during examination: NA

Learning Objective: RLP-STM-0603 Obj 8

Question Source: New

Question History: Last NRC Exam NA

Cognitive Level: Memory or Fundamental Knowledge ☑3 Comprehension or Analysis ☐

10 CFR Part 55 Content: 55.43.b5

Comments:

QUESTION 99 Rev 0

Examination Outline Cross-Reference: Level RO ☐ SRO ☑
Tier # 3 Group # 4
K/A # G.2.4.11 IR 4.2

Knowledge of abnormal condition procedures.

Proposed Question:

Following a transient from rated conditions, the following plant conditions exist:

- Nuclear Instrumentation Status lights below Full Core Display
  - APRM A,C,E,G All status lights lit
  - APRM B,D,F,H All status lights extinguished
- Division 1 containment isolation valves have all closed
- ½ scram on Division 1
- The plant is still online at rated conditions

Which of the following procedures should the CRS enter for these conditions?

A. AOP-0001, Reactor Scram

B. AOP-0010, Loss of One RPS Bus

C. AOP-0014, Loss of 125VDC

D. AOP-0042, Loss of an Instrument Bus

Proposed Answer: B.

Explanation:
A. Although a Division 1 half scram signal is present, entry in AOP-0001 is not appropriate unless a full reactor scram were to occur..
B. Correct – The symptoms given are all due to RPS Bus A being de-energized.
C. AOP-0014 does not provide the guidance needed for the given conditions. Transients involving bus losses causing annunciation and indications affecting multiple areas are typically covered by AOP-0014, AOP-0042, or AOP-0010. This fact makes this distractor plausible.
D. Although the symptoms given may look similar to the loss of VBS-PNL01A which would require entry into AOP-0042, loss of the VBS bus would cause isolation of those systems receiving input from the Leak Detection Systems (RHR, RWCU, RCIC). The stem indicates that ALL Div 1 isolations have occurred.

Technical Reference(s): AOP-0010

Proposed references to be provided to applicants during examination: NA

Learning Objective: None identified.

Question Source: New

Question History: Last NRC Exam NA

Cognitive Level: Memory or Fundamental Knowledge ☐ Comprehension or Analysis ☑3

10 CFR Part 55 Content: 55.43.b5

Comments:

QUESTION 100 Rev 0

Examination Outline Cross-Reference:	Level		RO ☐	SRO ☑
	Tier #	3	Group #	4
	K/A #	G.2.4.23		IR 4.4

Knowledge of the bases for prioritizing emergency procedure implementation during emergency operations.

Proposed Question:

Following a LOCA, actions are being taken within EOP-0002 to address primary containment parameters. The EOPs are indicating the primary containment must be vented.

Prior to taking this action, (1) who should the CRS/OSM discuss this evolution with and (2) why?

A. (1) Radiation Protection Manager; (2) To ensure the impact to offsite dose rates due to venting are considered when making Protective Action Recommendations to the public.

B. (1) Emergency Director; (2) To request assistance from engineering personnel in the Technical Support Center to determine how long containment must be vented.

C. (1) Engineering Director; (2) To request assistance from engineering personnel in the Technical Support Center to determine how long containment must be vented.

D. (1) Recovery Manager; (2) To ensure the impact to offsite dose rates due to venting are considered when making Protective Action Recommendations to the public.

Proposed Answer: D.

Explanation:
A. Part 2 is correct, but the communication is to the Recovery Manger.
B. The position stated in the procedure is RM/ED. These two roles are filled by one person until the EOF is activated. Once the roles are split, the RM is responsible for the public. The ED is responsible for plant activities. The time interval for venting is determined by pressure.
C. See “D”.
D. Correct – A Caution in the procedure for venting containment states that the Recovery Manager/Emergency Director must be notified if containment is to be vented during EOP execution. This is to ensure the impact to offsite dose is considered. Venting during public evacuations will cause elevated dose to the public so the RM who is responsible for public heath and safety must be kept informed.

Technical Reference(s): SOP-0059

Proposed references to be provided to applicants during examination: NA

Learning Objective: None identified.

Question Source: New

Question History: Last NRC Exam NA

Cognitive Level: Memory or Fundamental Knowledge ☑3 Comprehension or Analysis ☐

10 CFR Part 55 Content: 55.43.b4 Comments: