U.S. Nuclear Regulatory Commission
Site-Specific
RO Written Examination

Applicant Information

Name:	
Date: May 9, 2005	Facility/Unit: Nine Nile Point / Unit 2
Region: I	Reactor Type: GE
Start Time:	Finish Time:

Instructions

Use the answer sheets provided to document your answers. Staple this cover sheet on top of the answer sheets. To pass the examination, you must achieve a final grade of at least 80.00 percent. Examination papers will be collected 6 hours after the examination begins.

Applicant Certification

All work done on this examination is my own. I have neither given nor received aid.

____
Applicant's Signature

Results

Examination Value	________ Points
Applicant's Score	________ Points
Applicant's Grade	________ Percent

EXAMINATION ANSWER KEY

U2 NRC REACTOR OPERATOR WRITTEN EXAMINATION 2005

1 **SYSID: 22832** **Points: 1.00**

The plant is operating at rated power and core flow, with the following:

- A reduction in core flow transient results in core flow of 65% of rated
- Both Recirc pumps are still operating in high speed

Which one of the following identifies the Tech Spec **Thermal Limit LCO value** that will be affected and how?

A. APLHGR LCO limit and it is now lower.

B. APLHGR LCO limit and it is now higher.

C. MCPR LCO limit and it is now lower.

D. MCPR LCO limit and it is now higher.

Answer: D

Associated objective(s):

LC2 03-01 NRC EXAM DEVELOPMENT AREA

Question 1 Details

Question Type:	Multiple Choice
Topic:	NRC RO 1
System ID:	22832
User ID:	
Status:	Active
Must Appear:	No
Difficulty:	0.00
Time to Complete:	0
Point Value:	1.00
Cross Reference:	LC2 03-01
User Text:	
User Number 1:	0.00
User Number 2:	0.00
Comment:	Tech Spec Bases 3.2.2

N2-OP-29
N2-SOP-29

O2-OPS-001-202-2-01 - EO-1.11

Answer: d. is correct. The MCPR LCO operating limit is HIGHER following a flow reduction. Per the COLR and TS 3.2.2 *"MCPR shall be equal to or greater than the appropriate MCPR limits from Figures 2a and 2b times the K(f) shown in Figure 2c........"*
From Fig 2c, as flow is reduced below 100% to 65%, the value of K(f) rises from 1.0 to about 1.03

Distractor: a. & b. A and B are incorrect. APLHGR LCO LIMIT is not affected by either the reduction or a rise in core flow. Per COLR and TS 3.2.1 APLHGR limits are based on exposure. Although a reduction (by 0.78 times the 2 loop limit) in APLHGR limit is applied when in single loop, the conditions given in this question specifically state that *"Both Recirc pumps are still operating in high speed"*.

Distractor: c. is incorrect. MCPR limit is higher by Kf, not lower.

References Provided: None

Question 1 Cross References (table item links)

10CFR55

- 41(b)(5)

Cognitive Level

- 2

NUREG 1123 KA Catalog Rev. 2

- 295001 AK1.03 3.6/4.1, Knowledge of the operational implications of the following concepts as they apply to PARTIAL OR COMPLETE LOSS OF FORCED CORE FLOW CIRCULATION; Thermal limits

Level of Difficulty

- Level 3: Higher order Knowledge item

LP

- O2-OPS-001-202-2-01 Rev. na

Question Source

- New

PROC

- N2-OP-29 Rev. NA
- N2-SOP-29 Rev. NA

TECHSPEC

- 3.2.2 Rev. NA

Question Setting

- C1 (License class closed reference)

2 **SYSID: 22833** **Points: 1.00**

The plant is in Single Loop operation, following an unplanned Recirc Pump trip. The following conditions exist:

- Indicated drive flow in the operating Recirculation loop is 21,000 gpm
- Indicated total core flow on Control Room Panel P603 is 22 Mlbm/hr

Which one of the following identifies the current relationship between indicated total core flow on P603 flow recorder AND actual total Core Flow and the reason for the difference?

Indicated Total Core Flow (P603 Recorder) is......

A. higher than actual due to natural circulation flow.

B. higher than actual due to idle jet pump reverse flow.

C. lower than actual due to natural circulation flow.

D. lower than actual due to idle jet pump reverse flow.

Answer: C

Associated objective(s):

LC2 03-01 NRC EXAM DEVELOPMENT AREA

Question 2 Details

Question Type:	Multiple Choice
Topic:	NRC RO 2
System ID:	22833
User ID:	
Status:	Active
Must Appear:	No
Difficulty:	0.00
Time to Complete:	0
Point Value:	1.00
Cross Reference:	LC2 03-01
User Text:	
User Number 1:	0.00
User Number 2:	0.00
Comment:	O2-OPS-001-202-2-02, EO-1.8

KA Match justification, Total Core Flow is considered Nuclear Boiler Instrumentation of NMP2. Total Core Flow indicator is contained in training material O2-OPS-001-216-2-01, Reactor Vessel Instrumentation.

This question was a rewrite of Exam Bank question SYSID 16560

Answer: c is correct - NOTE 1 following Step H.6.0 of N2-OP-29, Reactor Recirculation System, states "When calculating total core flow in single loop operation and the operating loop drive flow is less than 22,000 gpm, Loop Flows should be added instead of subtracted". In addition, Step 6.3 of N2-RESP-07, Single Recirculation Loop Operating Requirements, states "If, while in single loop operation, with the non-operating loop Recirculation Pump shutdown and the operating loop drive flow is less than 22,000 GPM the flow in the idle loop will be positive due to natural circulation head. The total core flow summing network assumes all flow in an idle recirculation loop is negative.

References Provided: None

Question 2 Cross References (table item links)

10CFR55

- 41(b)(10)

Cognitive Level

- 1

NUREG 1123 KA Catalog Rev. 2

- 295001 AA2.06 3.2/3.3, Knowledge of the interrelations between PARTIAL OR COMPLETE LOSS OF FORCED CORE FLOW CIRCULATION AND THE FOLLOWING: Nuclear boiler instrumentation

Level of Difficulty

- Level 3: Higher order Knowledge item

LP

- O2-OPS-001-202-2-02 Rev. na

Question Source

- Bank

PROC

- N2-OP-29 Rev. NA
- N2-RESP-07 Rev. NA

Question Setting

- C1 (License class closed reference)

3 **SYSID: 22834** **Points: 1.00**

The plant is operating at 100% power, with the following:

- Division I Diesel Generator 2EGS*EG1 is operating in parallel with offsite power for monthly surveillance testing
- 2EGS*EG1 is supplying 3960 - 4400 KW to bus
- THEN.....Offsite breaker R-50 trips open

Which one of the following describes the effect on 2EGS*EG1 and the Electrical Distribution circuit breakers?

2EGS*EG1 ....

A. continues to run with its output breaker 101-1 closed. Offsite feeder breaker 101-13 is tripped open.

B. continues to run with its output breaker 101-1 and Offsite feeder breaker 101-13 tripped open.

C. trips on overspeed and its output breaker 101-1 is open. Offsite feeder breaker 101-13 is closed.

D. trips on overspeed and its output breaker 101-1 and Offsite feeder breaker 101-13 are tripped open.

Answer: A

Associated objective(s):

LC2 03-01 NRC EXAM DEVELOPMENT AREA

Question 3 Details

Question Type:	Multiple Choice
Topic:	NRC RO 3
System ID:	22834
User ID:	
Status:	Active
Must Appear:	No
Difficulty:	0.00
Time to Complete:	0
Point Value:	1.00
Cross Reference:	LC2 03-01
User Text:	
User Number 1:	0.00
User Number 2:	0.00
Comment:	EO-1.8

KA 295003 Partial or Complete Loss of AC
AA1.02 Ability to operate and/or monitor the following as they apply to PARTIAL OR COMPLETE LOSS OF A.C. POWER: Emergency generators. 4.2

Answer:	A. is correct. R-50 trip results in a loss of offsite Line 5. Loss of offsite power causes offsite Feeder 101-13 to trip open. Diesel Generator 2EGS*EG1 continues to run with is output breaker 101-1 closed supplying the emergency switchgear.
Distractor:	B. is incorrect. Diesel Generator 2EGS*EG1 continues to run with is output breaker 101-1 closed supplying the emergency switchgear.
Distractor:	C and D are incorrect. Diesel Generator 2EGS*EG1 will not trip on overspeed even on a loss of full load. Tech Spec 3.8.1 SR 3.8.1.7 and SR 3.8.1.8 are performed every 24 months to demonstrate that this is true.

References Provided: None

Question 3 Cross References (table item links)

10CFR55

- 41(b)(7)

Cognitive Level

- 1

NUREG 1123 KA Catalog Rev. 2

- 295003 AA1.02 4.2*/4.3*, Ability to operate and/or monitor the following as they apply to PARTIAL OR COMPLETE LOSS OF A.C. POWER: Emergency generators

Level of Difficulty

- Level 2: System operation and response

LP

- O2-OPS-001-264-2-01 Rev. NA

Question Source

- New

PROC

- N2-OP-100A Rev. NA

Question Setting

- C1 (License class closed reference)

4 **SYSID: 22835** **Points: 1.00**

The plant is operating at 100% power, with the following:

0600 CSH is inoperable and out of service with Red Clearance applied
0715 MSIV automatic isolation occurs
0715 All Feedwater Pumps trip and cannot be restarted
0718 RCIC system starts and injects
0720 RPV water level is 80 inches and steady
0720 RPV pressure is maintained 800 to 1000 psig with SRVs
0720 All Low Pressure ECCS systems are operable and in standby
0725 CRS directs plant cooldown to cold shutdown be performed
0725 A loss of BYS*SWG002A 125 VDC Bus occurs

Which one of the following describes the impact of these conditions on the use of systems to perform a plant cooldown?

A. RHS Loop B can be placed in Suppression Pool Cooling from the Main Control Room; RHS Loop A cannot be. RCIC is no longer available to maintain water level.

B. Both RHS loops can be placed in Suppression Pool Cooling from the Main Control Room. RCIC continues to inject to maintain water level.

C. Alternate Pressure Control Systems other than the SRVs are required to depressurize. RCIC is no longer available to maintain water level.

D. Alternate Pressure Control Systems including the SRVs are required to depressurize. RCIC continues to inject to maintain water level.

Answer: D

Associated objective(s):

LC2 03-01 NRC EXAM DEVELOPMENT AREA

Question 4 Details

Question Type:	Multiple Choice
Topic:	NRC RO 4
System ID:	22835
User ID:	
Status:	Active
Must Appear:	No
Difficulty:	0.00
Time to Complete:	0
Point Value:	1.00
Cross Reference:	LC2 03-01
User Text:	
User Number 1:	0.00
User Number 2:	0.00
Comment:	O2-OPS-001-263-2-01 - EO-1.8

Answer:	D. is correct - A loss of Division 1 125 VDC BYS*SWG002A results in the loss of SRV relief mode "C" solenoids The EOP Bases (page 4-61) allows ADS solenoids (Div II solenoid is still available) to be used in the unlikely event that SRV operation cannot be performed from P601. SRV are an Alternate Pressure Control Systems per N2-EOP-RPV. RCIC continues to inject since the system was lined up and injecting when the loss of DC occurred. RCIC can still operate even though all of its DC powered components are deenergized. The RCIC Flow Controller is 120 VAC UPS powered.
Distractor:	A. is incorrect - RCIC is still available to inject. RHS A Loop is not available for Suppression Pool Cooling because 125 VDC control power is required to start RHS*P1A.
Distractor:	B. is incorrect - RHS A Loop is not available for Suppression Pool Cooling because 125 VDC control power is required to start RHS*P1A.
Distractor:	C. is incorrect - RCIC will still inject since it was running when DC power was lost. SRVs can also still be operated using ADS solenoids per EOP Bases.

References Provided: None

Question 4 Cross References (table item links)

10CFR55

- 41(b)(10)

Cognitive Level

- 2

NUREG 1123 KA Catalog Rev. 2

- 295004 AA1.02 3.8/4.1; Ability to operate and/or monitor the following as they apply to PARTIAL OR COMPLETE LOSS OF D.C. POWER: Systems necessary to assure safe plant shutdown

Level of Difficulty

- Level 3: Higher order Knowledge item

LP

- O2-OPS-001-263-2-01 Rev. na

Question Source

- New

PROC

- N2-EOP-RPV Rev. NA

Question Setting

- C1 (License class closed reference)

5 **SYSID: 22836** **Points: 1.00**

Plant startup is in progress, with the following:

- Total Core Flow is 70 Mlbm/hr
- Reactor Power is being held at 60%
- Reactor Feedpump B is in service with LV10B in AUTOMATIC
- Reactor Feedpump A is running on min flow with LV10A and LV55A in MANUAL and full closed for troubleshooting
- THEN, a spurious Main Generator Lockout trip occurs
- NPS-SWG001 and NPS-SWG003 fast transfer occurs

Which one of the following describes the condition of the Reactor Recirculation System (RCS) pumps and flow control valves (FCVs) one minute after the generator lockout?

A. Pumps downshifted to slow speed with FCVs at pre-transient position.

B. Pumps downshifted to slow speed with FCVs at minimum position.

C. Pumps tripped to zero speed with FCVs at pre-transient position.

D. Pumps tripped to zero speed with FCVs at minimum position.

Answer: A

Associated objective(s):

LC2 03-01 NRC EXAM DEVELOPMENT AREA

Question 5 Details

Question Type:	Multiple Choice
Topic:	NRC RO 5
System ID:	22836
User ID:	
Status:	Active
Must Appear:	No
Difficulty:	0.00
Time to Complete:	0
Point Value:	1.00
Cross Reference:	LC2 03-01
User Text:	
User Number 1:	0.00
User Number 2:	0.00
Comment:	O2-OPS-001-202-2-01 EO 1.4 O2-OPS-001-202-2-02 EO-1.4 Use P/F MAP to determine that RCS FCVs are currently above minimum position N2-OP-29, D.6.0 and D.8.0

Answer: a. is correct. Generator lockout results in a Main Turbine Trip. Stop Valve/Control Valve closure results in a reactor scram along with RCS system EOC RPT breaker trip and pump downshift to slow speed. From 60% power with two Feed pump operating (breakers closed), FCV runback will NOT occur when RPV level drops during the scram. The FCVs will remain at their pre-transient position. Additionally, with one Feed pump injecting following the scram, RPV water level will remain above the RCS pump trip to zero speed level of 108.8 inches. The pump also downshifts to slow speed if RPV water level drops below Level 3 (159.3 inches)

Distractor: b. is incorrect, because a FCV runback to minimum position does NOT occur during this transient. A runback will occur if only one feed pump is running and RPV water level drops below 178 inches. Based on given power level and core flow, the Power Flow Map indicates that FCVs must be above their minimum position (actual position is 25%), so it cannot be assumed that the FCVs have started at minimum position.

Distractor: c. and d. are incorrect, because with one Feed pump running and injecting following the scram, RPV water level will remain above the RCS pump trip to zero speed level of 108.8 inches. No feed pump trip will occur for this transient. Pump trips are plausible for other transients, such as loss of feedwater, resulting in RPV water level reaching the trip setpoint of 108.8 inches.

References Provided: 2 Loop Power/Flow Map EM950A

Question 5 Cross References (table item links)

10CFR55

- 41(b)(7)

Cognitive Level

- 2

NUREG 1123 KA Catalog Rev. 2

- 295005 AA1.01 3.1/3.3, Ability to operate and/or monitor the following as they apply to MAIN TURBINE GENERATOR TRIP: Recirculation system: Plant-Specific

Level of Difficulty

- Level 3: Higher order Knowledge item

LP

- O2-OPS-001-202-2-01 Rev. NA Item EO-7.0
- O2-OPS-001-202-2-02 Rev. na

Question Source

- New

PROC

- N2-OP-29 Rev. NA

Question Setting

- C1 (License class closed reference)

6 **SYSID: 22837** **Points: 1.00**

The plant is operating at 100% power, with the following:

- An automatic reactor scram occurs
- All operating Feedwater Pumps trip during the transient
- N2-SOP-101C Reactor Scram IMMEDIATE ACTIONS are being taken
- RPV Pressure is 900 psig and lowering
- RPV water level is 125 inches and lowering
- One Turbine Bypass Valve remains open

Which one of the following describes the required condition for the Feedwater System LV10s and LV55s and why, per N2-SOP-101C Reactor Scram?

A. In manual and closed to prevent uncontrolled water injection.

B. In manual and closed to allow for Feedwater Pump restart.

C. In manual and open to allow for water level restoration.

D. In automatic and open to allow for water level restoration.

Answer: A

Associated objective(s):

LC2 03-01 NRC EXAM DEVELOPMENT AREA

EXAMINATION ANSWER KEY

Question 6 Details

Question Type:	Multiple Choice
Topic:	NRC RO 6
System ID:	22837
User ID:	
Status:	Active
Must Appear:	No
Difficulty:	0.00
Time to Complete:	0
Point Value:	1.00
Cross Reference:	LC2 03-01
User Text:	
User Number 1:	0.00
User Number 2:	0.00
Comment:	LP O2-OPS-006-SOP-2-27 EO-27.2

Answer:	A is correct. Per N2-SOP101C Immediate Action IF all feedwater pumps have tripped THEN Place ALL 2FWS-LV10 and LV55 controllers to "manual" and verify the valves are full closed. This is done to prevent uncontrolled injection if RPV pressure drops, which it will with a BPV open.
Distractor:	B is incorrect. Valves are taken to manual and closed regardless of whether or not the Feedwater pump will be started. If restart is required the valve controllers will again be directed to be placed in manual and set to 0%.
Distractor:	C is incorrect. SOP-101C directs LV to manual and CLOSED, not open. Although leaving the valves open will result in RPV injection when pressure drops, the valves are to be closed and opened once pressure is reduced so that the operator has direct control over level.
Distractor:	D is incorrect. Valve controllers are NOT left in automatic because with low water level and controller in auto, the operator no longer has level controller and when pressure drops, the potential exists for an uncontrolled injection.

References Provided: None

Question 6 Cross References (table item links)

10CFR55
- 41(b)(7)

Cognitive Level
- 2

NUREG 1123 KA Catalog Rev. 2
- 295006 AK2.02 3.8/3.8M Knowledge of the interrelations between SCRAM and the following: Reactor water level control system

Level of Difficulty
- Level 2: System operation and response

Question Source
- New

PROC
- N2-SOP-101C Rev. NA

Question Setting
- C1 (License class closed reference)

7 **SYSID: 22838** **Points: 1.00**

The plant is being operated from the REMOTE SHUTDOWN PANEL during a Control Room Evacuation, with the following:

- RCIC is injecting to the RPV
- RPV level is 200 inches and rising
- Flow controller thumbwheel is set in AUTO to 400 gpm
- RCIC Turbine speed is 1500 RPM
- RPV Level continues to rise

Which one of the following actions is required to stop the level rise, per N2-SOP-78, Control Room Evacuation?

A. Trip the turbine using manual trip pushbutton.

B. Close Steam Admission Valve using control switch.

C. Place Flow Controller to MANUAL and set to 0 output.

D. Adjust Flow Controller thumbwheel setpoint to 300 gpm.

Answer: B

Associated objective(s):

LC2 03-01 NRC EXAM DEVELOPMENT AREA

Question 7 Details

Question Type:	Multiple Choice
Topic:	NRC RO 7
System ID:	22838
User ID:	
Status:	Active
Must Appear:	No
Difficulty:	0.00
Time to Complete:	0
Point Value:	1.00
Cross Reference:	LC2 03-01
User Text:	
User Number 1:	0.00
User Number 2:	0.00
Comment:	O2-OPS-001-296-2-00 - EO-1.7

Answer:	B is correct, per SOP-78. If speed cannot be maintained above 1500 RPM and level continues to rise then close the Steam Admission Valve MOV120.
Distractor:	A is incorrect. Trip the turbine is not required per SOP-78 and if injection needs to be restored, the trip and throttle valve would have to be reset.
Distractor:	C is incorrect. Lowering controller output to 0 will result in turbine speed below 1500 RPM and violate the low RPM procedure limit of 1500 RPM.
Distractor:	D is incorrect. Lowering thumbwheel setting to 300 gpm violates the procedure conditional statement that if lowering flow below 400 gpm, the controller should be placed in manual to prevent system flow oscillations. Also would result in speed below 1500 RPM.

Reference Provided: None

Question 7 Cross References (table item links)

10CFR55

- 41(b)(7)

Cognitive Level

- 1

NUREG 1123 KA Catalog Rev. 2

- 295016 AK2.01 4.4/4.5 Knowledge of interrelations between CONTROL ROOM ABANDONMENT and the following: Remote shutdown panel: Plant-Specific

Level of Difficulty

- Level 2: System operation and response

LP

- O2-OPS-001-296-2-00 Rev. na

Question Source

- Bank

PROC

- N2-SOP-78 Rev. NA

Question Setting

- C1 (License class closed reference)

8 **SYSID: 22839** **Points: 1.00**

The plant has experienced a LOCA, with the following:

- Reactor Building Closed Loop Cooling (CCP) has been lost and cannot be recovered
- Residual Heat Removal (RHS) pumps are injecting to the RPV
- RPV water level is -25 inches (actual) and steady

Which one of the following identifies the required actions for the operating RHS pumps, per N2-SOP-13, Loss of CCP?

A. Continue to operate without cooling water but only until adequate core cooling is restored.

B. Continue to operate while shifting cooling water supply to Service Water System.

C. Must be tripped before motor temperature reaches 266°F to prevent damaging windings.

D. Must be tripped before pump temperature reaches 194°F to prevent damaging seals.

Answer: B

Associated objective(s):

LC2 03-01 NRC EXAM DEVELOPMENT AREA

EXAMINATION ANSWER KEY

U2 NRC REACTOR OPERATOR WRITTEN EXAMINATION 2005

Question 8 Details

Question Type:	Multiple Choice
Topic:	NRC RO 8
System ID:	22839
User ID:	
Status:	Active
Must Appear:	No
Difficulty:	0.00
Time to Complete:	0
Point Value:	1.00
Cross Reference:	LC2 03-01
User Text:	
User Number 1:	0.00
User Number 2:	0.00
Comment:	Question derived from bank question SYSID 13394 O2-OPS-001-208-2-00, 11. A.6.e, EO-1.5

Answer:	B is correct based on the need for RPV injection & restoration of component cooling to RHS pumps. N2-SOP-13 directs seal cooling shifted to Service Water supply per N2-OP-13 H.7.0. Continued pump operation is allowed.
Distractor:	A is incorrect because no attempt to restore component cooling is addressed as directed by N2-SOP-13. Continued pump operation is allowed. N2-SOP-13 does not required the RHR pump to be shutdown even after adequate core cooling is restored.
Distractor:	C is incorrect because N2-SOP-13 (and EOPs) does not require pump shutdown on winding temperature. CCP does not supply winding coolers, so the degraded CCP system will not cause winding temperatures to rise. N2-OP-31 D.2.0 identifies the maximum winding temperature "Alarm" value of 311°F and "Shutoff" value of 338°F.
Distractor:	D is incorrect because N2-SOP-13 (and EOPs) does not require pump shutdown on pump temperature. N2-OP-31 D.2.0 identifies the maximum bearing temperature "Alarm" value of 194°Fand "Shutoff" value of 212°F.

References Provided: None

Question 8 Cross References (table item links)

10CFR55
- 41(b)(8)

Cognitive Level
- 1

NUREG 1123 KA Catalog Rev. 2
- 295018 AK1.01 3.5/3.6; Knowledge of the operational implications of the following concepts as they apply to PARTIAL OR COMPLETE LOSS OF COMPONENT COOLING WATER: Effects on component/system operations

Level of Difficulty
- Level 3: Higher order Knowledge item

Question Source
- Bank

PROC
- N2-SOP-13 Rev. NA

Question Setting
- C1 (License class closed reference)

9 **SYSID: 22840** **Points: 1.00**

A plant startup is in progress, with the following:

- Feedwater Pump A is in service
- All three Feedwater Pump Suction MOVs are open (CNM-MOV84A,B,C)
- Low Flow Control Valve 2FWS-LV55A is controlling in AUTO
- 2FWS-LV55A is at 40% open position
- IAS pressure to ALL Feedwater Pumps valves is lost
- Any effected local air accumulators have depressurized

Which one of the following describes the effect on 2FWS-LV55A position and reactor water level?

	2FWS-LV55A% Open	Reactor Water Level
A.	0% open	Lowering, below normal level
B.	40% open	Constant, normal level
C.	40% open	Lowering, below normal level
D.	100% open	Rising, above normal level

Answer: C

Associated objective(s):

LC2 03-01 NRC EXAM DEVELOPMENT AREA

Question 9 Details

Question Type:	Multiple Choice
Topic:	NRC RO 9
System ID:	22840
User ID:	
Status:	Active
Must Appear:	No
Difficulty:	0.00
Time to Complete:	0
Point Value:	1.00
Cross Reference:	LC2 03-01
User Text:	
User Number 1:	0.00
User Number 2:	0.00
Comment:	Question derived from bank SYSID 6834

O2-OPS-001-259-2-01 - EO-1.5

Answer:	C. is correct because on loss of IAS, the LV55A fails as is and min flow valves in Feed & Condensate Systems fail open to divert flow from the reactor causing level to drop.
Distractor:	A & B. are incorrect because LV55A fails as is at 40% open.
Distractor:	D. is incorrect valve fails as-is not to 100% open.

References Provided: None

Question 9 Cross References (table item links)

10CFR55

- 41(b)(7)

Cognitive Level

- 2

NUREG 1123 KA Catalog Rev. 2

- 295019 AK2.03 3.2/3.3 Knowledge of the interrelations between PARTIAL OR COMPLETE LOSS OF INSTRUMENT AIR and the following: Reactor feedwater

Level of Difficulty

- Level 3: Higher order Knowledge item

LP

- O2-OPS-001-259-2-01 Rev. na

Question Source

- Bank

PROC

- N2-OP-3 Rev. NA

Question Setting

- C1 (License class closed reference)

10 **SYSID: 22841** **Points: 1.00**

The plant has just entered Mode 4 following an unplanned shutdown to perform Main Turbine repairs, with the following:

- RHS Loop B is operating in Shutdown Cooling (SDC)
- A transient results in RPV water level dropping to 140 inches before being stabilized
- With RPV water level still at about 140 inches a loss of Line 6 occurs
- Division II EDG fails to start and cannot be started

Which one of the following methods is used to restore **CORE DECAY HEAT removal**, per N2-SOP-31, Loss of Shutdown Cooling?

A. Start one Alternate Decay Heat Removal loop in normal ADH lineup.

B. Restore level to 178 to 187 inches and start RHS A in normal SDC lineup.

C. Restore level to 178 to 187 inches and start at least once RCS pump.

D. Raise level to about 255 inches and start RHS with flow through SRVs.

Answer: D

Associated objective(s):

LC2 03-01 NRC EXAM DEVELOPMENT AREA

EXAMINATION ANSWER KEY

U2 NRC REACTOR OPERATOR WRITTEN EXAMINATION 2005

Question 10 Details

Question Type:	Multiple Choice
Topic:	NRC RO 10
System ID:	22841
User ID:	
Status:	Active
Must Appear:	No
Difficulty:	0.00
Time to Complete:	0
Point Value:	1.00
Cross Reference:	LC2 03-01
User Text:	
User Number 1:	0.00
User Number 2:	0.00
Comment:	O2-OPS-006-SOP-2-01 - EO-14.2

Answer:	D. is correct, per SOP-31 use Alternate Shutdown Cooling Preferred Lineup.
Distractor:	A. is incorrect. ADH is not available following a normal shutdown for decay heat removal because suction is from SFP with cavity gates installed and RPV head in place
Distractor:	B. is incorrect because with loss of line 6, no power is available to re-open the Div II SDC inboard containment isolation valve inside the drywell, which has automatically closed when level dropped below 159 inches The DW is not open for access under these conditions to locally open the MOV.
Distractor:	C. is incorrect because establishing coolant circulation with a Recirc (RCS) pump will not result in removal of decay heat.

References Provided: None

Question 10 Cross References (table item links)

10CFR55

- 41(b)(7)

Cognitive Level

- 2

NUREG 1123 KA Catalog Rev. 2

- 295021 AA1.04 3.7/3.7 Loss of Shutdown Cooling Ability to operate and/or monitor the following as then apply to LOSS OF SHUTDOWN COOLING; Alternate heat removal methods

Level of Difficulty

- Level 3: Higher order Knowledge item

LP

- O2-OPS-006-SOP-2-01, Rev. NA

Question Source

- New

PROC

- N2-SOP-31 Rev. NA

Question Setting

- C1 (License class closed reference)

11 **SYSID: 22842** **Points: 1.00**

Core Alterations are in progress, with the following:

- An irradiated fuel bundle being moved from the reactor cavity to Spent Fuel Pool
- Bundle becomes ungrappled and falls into the reactor vessel downcomer area. (Between the vessel wall and the shroud)
- Bundle integrity is maintained

Which one of the following workers is at greatest risk of radiation overexposure?

A. I&C Tech at SLS Tank.

B. Refuel SRO on the Bridge.

C. Mechanic working on SRVs.

D. RP Tech at Refuel Floor Access Point.

Answer: C

Associated objective(s):

LC2 03-01 NRC EXAM DEVELOPMENT AREA

Question 11 Details

Question Type:	Multiple Choice
Topic:	NRC RO 11
System ID:	22842
User ID:	
Status:	Active
Must Appear:	No
Difficulty:	0.00
Time to Complete:	0
Point Value:	1.00
Cross Reference:	LC2 03-01
User Text:	
User Number 1:	0.00
User Number 2:	0.00
Comment:	O2-OPS-006-SOP-2-01 - EO-17.2

Answer:	C is correct. Worker closest to the bundle with the least amount of shielding will be at greatest risk. SRVs are in the Drywell at the approximate elevation of the downcomer.
Distractor:	A, B, and D are incorrect because of the location of these components. SRO on the bridge is shielded by water level within the cavity, as is the RP Tech at the access. SLC Tank is in Secondary Containment, which is shielded by Primary Containment wall.

References Provided: None

Question 11 Cross References (table item links)

10CFR55
- 41(b)(7)

Cognitive Level
- 1

NUREG 1123 KA Catalog Rev. 2
- 295023 AK1.01 3.6/4.1, Knowledge of operational implications of the following concepts as they apply to REFUELING ACCIDENTS: Radiation exposure hazards

Level of Difficulty
- Level 2: System operation and response

LP
- O2-OPS-006-SOP-2-01, Rev. NA

Question Source
- Bank

PROC
- N2-SOP-39 Rev. NA

Question Setting
- C1 (License class closed reference)

12 **SYSID: 22843** **Points: 1.00**

The plant has experienced a LOCA inside the Drywell, with the following:

- Drywell pressure is 5 psig
- **Both** Control Building Special Filter Train Booster Fans start at 1200

Which one of the following identifies the **latest time** that both Control Building Special Filter Train Booster Fans can remain running and why, per N2-OP-53A, Control Building Ventilation System?

A. 1220 to prevent excessive positive Control Room pressure.

B. 1220 to prevent excessive radiation exposure to personnel.

C. 2000 to prevent excessive positive Control Room pressure.

D. 2000 to prevent excessive radiation exposure to personnel.

Answer: B

Associated objective(s):

LC2 03-01 NRC EXAM DEVELOPMENT AREA

Question 12 Details

Question Type:	Multiple Choice
Topic:	NRC RO 12
System ID:	22843
User ID:	
Status:	Active
Must Appear:	No
Difficulty:	0.00
Time to Complete:	0
Point Value:	1.00
Cross Reference:	LC2 03-01
User Text:	
User Number 1:	0.00
User Number 2:	0.00
Comment:	This question was derived from bank question SYSID 17779

EO-1.7.d

Answer:	B is correct - CAUTION in Step H 1.0 of N2-OP-53A states "BOTH Special Filter Trains start simultaneously on a valid LOCA/Hi Rad signal. Failure to shutdown one of the operating fans 2HVC*FN2A(B) within 20 minutes of Actuation CAN result in the Control Room personnel receiving Excessive Radiation Exposure".
Distractor:	A is incorrect. The shutdown of one train does not affect positive pressure.
Distractor:	C&D incorrect. An 8 hour requirement exists to close one of the Building intake dampers under LOCA conditions.

References Provided: NONE

Question 12 Cross References (table item links)

10CFR55

- 41(b)(10)

Cognitive Level

- 1

NUREG 1123 KA Catalog Rev. 2

- G2.1.32 3.4/3.8 Ability to explain and apply system limits and precautions
- 295024 High Drywell Pressure

Level of Difficulty

- Level 2: System operation and response

LP

- O2-OPS-001-288-2-02 Rev. na

Question Source

- Bank

PROC

- N2-EOP-6 Rev. NA
- N2-OP-53A Rev. NA

Question Setting

- C1 (License class closed reference)

13 **SYSID: 22844** **Points: 1.00**

The plant is operating at 100%, with the following:

0000 EHC Pressure Regulator A failed and is out of service. Operation continues on the backup regulator EHC Pressure Regulator B

0015 Pressure transmitter supplying the backup EHC Pressure Regulator B fails downscale

Which one of the following describes the Turbine Bypass Valve (BPV) and Safety/Relief Valve (SRV) response to the transient?

A. BPVs regulate open to maintain RPV pressure below SRVs relief-mode setpoints and the SRVs remain closed.

B. BPVs regulate open but RPV pressure rises to SRVs relief-mode setpoints. SRVs cycle to limit pressure rise.

C. BPVs remain closed and RPV pressure rises to SRVs relief-mode setpoints. SRVs cycle to limit pressure rise.

D. BPVs remain closed and RPV pressure rises to SRVs safety-mode setpoints. SRVs cycle to limit pressure rise.

Answer: C

Associated objective(s):

LC2 03-01 NRC EXAM DEVELOPMENT AREA

Question 13 Details

Question Type:	Multiple Choice
Topic:	NRC RO 13
System ID:	22844
User ID:	
Status:	Active
Must Appear:	No
Difficulty:	0.00
Time to Complete:	0
Point Value:	1.00
Cross Reference:	LC2 03-01
User Text:	
User Number 1:	0.00
User Number 2:	0.00
Comment:	O2-OPS-001-248-2-00 - EO-1.8

This instrument failure results in an actual RPV high pressure condition.

Answer: C is correct. When the Pressure transmitter supplying the backup regulator fails downscale, EHC senses lowering pressure and closes Turbine Control Valves and Bypass Valves. This causes RPV pressure to rise and an automatic scram results on high RPV pressure of 1052 psig. The BPV remain closed since their sensing instrument is failed low. SRV operation in the relief mode senses actual RPV pressure from different instruments than those used in EHC. With actual pressure rising, the SRVs will lift in the relief mode.

Distractor: A and B are incorrect. BPV remain closed since their sensing instrument is failed low

Distractor: D is incorrect. SRVs lift in relief mode at lower setpoints than in safety mode. Safety mode does not rely on pressure transmitters. In safety mode SRVs lift on spring pressure.

References Provided: None

Question 13 Cross References (table item links)

10CFR55

- 41(b)(10)

Cognitive Level

- 2

NUREG 1123 KA Catalog Rev. 2

- 295025 EA2.01 4.3*/4.3. Ability to determine/interpret the following as they apply to HIGH REACTOR PRESSURE: Reactor pressure

Level of Difficulty

- Level 3: Higher order Knowledge item

LP

- O2-OPS-001-248-2-00 Rev. na

Question Source

- New

PROC

- N2-OP-23 Rev. NA

Question Setting

- C1 (License class closed reference)

14 **SYSID: 22845** **Points: 1.00**

Reactor power is 10% during plant startup, with the following:

- RCIC Full Flow test surveillance is in progress
- Suppression Pool Average Water Temperature (SPT) is being logged every 5 minutes
- RCIC is operating at 600 gpm
- Average SPT is 90.1°F and rising

Which one of the following describes the requirement regarding RCIC testing?

A. Test can continue, however SPT must now be logged every minute.

B. Test can continue because SPT is still below applicable LCO limit.

C. Test must be stopped because SPT is above applicable LCO limit.

D. Test must be stopped because elevated SPT may cause pump damage.

Answer: B

Associated objective(s):

LC2 03-01 NRC EXAM DEVELOPMENT AREA

Question 14 Details

Question Type:	Multiple Choice
Topic:	NRC RO 14
System ID:	22845
User ID:	
Status:	Active
Must Appear:	No
Difficulty:	0.00
Time to Complete:	0
Point Value:	1.00
Cross Reference:	LC2 03-01
User Text:	
User Number 1:	0.00
User Number 2:	0.00
Comment:	Technical Specifications: 3.6.2.1

O2-OPS-001-217-2-00 - EO-1.11

Answer:	B is correct. Per TS 3.6.2.1, with testing in progress that adds heat to the suppression pool, the applicable LCO limit for SPT is ≤ 105°F. Testing can continue. The normal limit without testing is 90°F.
Distractor:	A is incorrect. Even though test can continue, it is not because SPT logging requirements have changed. When testing occurs that adds heat to the Suppression Pool, SR 3.6.2.1.1 requires logging every 5 minutes. There is no requirement to log temperature every minute.
Distractor:	C is incorrect. Per TS 3.6.2.1, with testing in progress that adds heat to the suppression pool, the applicable LCO limit for SPT is ≤ 105°F. The normal limit without testing is 90°F. If the 90°F limit is applied (incorrectly) the testing must be stopped.
Distractor:	D is incorrect. SPT of 90°F elevated compared to the normal value and is an EOP entry condition for EOP-PC. EOP cautions exist in EOP_RPV related to RCIC operation with elevated SPT. EOP caution states that "exceeding 140°F suction temperature may cause system damage." The test is not required to be stopped at 90°F to prevent pump damage.

References Provided: None

Question 14 Cross References (table item links)

10CFR55

- 41(b)(10)

Cognitive Level

- 2

NUREG 1123 KA Catalog Rev. 2

- G2.2.22 3.4/4.1; Knowledge of limiting conditions for operations and safety limits
- 295026 Suppression Pool High Water Temperature

Level of Difficulty

- Level 3: Higher order Knowledge item

LP

- O2-OPS-001-217-2-00 Rev. na

Question Source

- New

PROC

- N2-OP-35 Rev. NA

TECHSPEC

- T.S.3.6.2.1 Rev. NA

Question Setting

- C1 (License class closed reference)

15 **SYSID: 22846** **Points: 1.00**

The plant has experienced a LOCA, with the following:

- Drywell Pressure peaked at 10 psig and is now slowly lowering
- Hottest Drywell Temperature peaked at 305°F and is now slowly lowering
- RPV Pressure is 50 psig
- ECCS Systems are injecting into the RPV
- Wide Range RPV water level is 30 inches and is steadily rising
- Fuel Zone instruments read upscale

Which one of the following describes the current requirement regarding entry into RPV Flooding EOP and why?

A. RPV Flooding must be entered because parameters are in the BAD region of RPV Saturation Temperature curve and reference leg flashing IS occurring.

B. RPV Flooding must be entered because parameters are in the BAD region of RPV Saturation Temperature curve even though reference leg flashing IS NOT occurring.

C. RPV Flooding entry is NOT required because water level readings are above Minimum Indicated Level values even though reference leg flashing IS occurring.

D. RPV Flooding entry is NOT required because water level readings are above Minimum Indicated Level values and reference leg flashing IS NOT occurring.

Answer: D

Associated objective(s):

LC2 03-01 NRC EXAM DEVELOPMENT AREA

Question 15 Details

Question Type:	Multiple Choice
Topic:	NRC RO 15
System ID:	22846
User ID:	
Status:	Active
Must Appear:	No
Difficulty:	0.00
Time to Complete:	0
Point Value:	1.00
Cross Reference:	LC2 03-01
User Text:	
User Number 1:	0.00
User Number 2:	0.00
Comment:	O2-OPS-006-344-2-01 - EO-1.2

Answer: D is correct. Conditions are above DETAIL A RPV Water Level Instruments of EOP-PC and RPV. Elevated DWT and low RPV pressure can result in flashing. Level instruments can only be used if "there is NO evidence of instrument leg flashing AND the instrument reads above the Minimum Indicated Level (Table C). There is NO evidence that instrument leg boiling is taking place.

Distractor: A and B incorrect. RPV Flooding is NOT required based solely on being in the BAD region of Fig B Detail A. As long as NO evidence that instrument leg boiling is taking place exists.

Distractor: C is incorrect. There is NO evidence that instrument leg boiling is taking place and the instrument reads above Minimum Indicated Level (Table C).

References Provided: N2-EOP-PC Detail A

Question 15 Cross References (table item links)

10CFR55
- 41(b)(7)

Cognitive Level
- 2

NUREG 1123 KA Catalog Rev. 2
- 295028 EK2.03 3.6/3.8, Knowledge of the interrelationship between HIGH DRYWELL TEMPERATURE and the following: Reactor water level indication

Level of Difficulty
- Level 3: Higher order Knowledge item

LP
- O2-OPS-006-344-2-01 Rev. NA

Question Source
- New

PROC
- N2-EOP-PC Rev. NA
- N2-EOP-RPV Rev. NA

Question Setting
- C1 (License class closed reference)

16 **SYSID: 22847** **Points: 1.00**

The plant was operating at 100% power, when the following occurred:

- Breach in the Suppression Pool Wall occurs at Elevation 190 feet
- Actions to add water to the Suppression Pool are complete
- Suppression Pool Level (SPL) is 195 feet and lowering slowly
- EOP-RPV is entered from EOP-PC
- 10 rods insert to position 02 and the rest fully insert, following the manual scram

Which one of the following strategies is used to mitigate the consequences of the breach per EOPs and Transient Mitigation Guidelines?

A. Open all Turbine Bypass Valves now. Opening all ADS Valves is NOT required even if SPL reaches 192 feet.

B. Open all Turbine Bypass Valves now. Open all ADS Valves prior to SPL of 192 feet.

C. Opening Turbine Bypass Valves is NOT permitted. Open all ADS Valves when SPL is 192 feet.

D. Opening Turbine Bypass Valves is NOT permitted. Open all ADS Valves now to prevent SRV tailpieces from uncovering.

Answer: B

Associated objective(s):

LC2 03-01 NRC EXAM DEVELOPMENT AREA

Question 16 Details

Question Type:	Multiple Choice
Topic:	NRC RO 16
System ID:	22847
User ID:	
Status:	Active
Must Appear:	No
Difficulty:	0.00
Time to Complete:	0
Point Value:	1.00
Cross Reference:	LC2 03-01
User Text:	
User Number 1:	0.00
User Number 2:	0.00
Comment:	O2-OPS-006-34-2-01 - EO-1.2

N2-EOP-PC. N2-EOP-RPV, Transient Mitigation Guidelines for Suppression Pool Level TMG 2.4.2 TMG 2.2.3.4 and 2.4.2

Answer: B is correct. Per Transient Mitigation Guidelines for Suppression Pool Level TMG2.2.3.4 and 2.4.2, it is appropriate to “anticipate” a blowdown if a blowdown is imminent. In this case with SPL approaching 192 feet and the breach is at 190 feet, the limit will be exceeded. When SPL does reach 192 feet, a blowdown is then required and ADS valves must be opened, but only if at or above 192 feet (per EOP-C2).

Distractor: A is incorrect. When SPL does reach 192 feet, a blowdown is now required and ADS valves must be opened only if at or above 192 feet (per EOP-C2).

Distractor: C and D are incorrect because with all rods fully inserted, EOP-RPV override step P-1 permits use of rapidly depressurizing the RPV using the BPVs and the TMG specifically incorporates this strategy for this casualty.

References Provided: None

Question 16 Cross References (table item links)

10CFR55
- 41(b)(10)

Cognitive Level
- 2

NUREG 1123 KA Catalog Rev. 2
- G2.4.6 3.1/4 Knowledge symptom based EOP mitigation strategies
- 295030 Low Suppression Pool Water Level

Level of Difficulty
- Level 3: Higher order Knowledge item

LP
- O2-OPS-006-344-2-01 Rev. NA

OTHER REFS
- (GUIDE) Transient Mitigation Guideline, Rev. NA

Question Source
- New

PROC
- N2-EOP-PC Rev. NA
- N2-EOP-RPV Rev. NA

Question Setting
- C1 (License class closed reference)

17 **SYSID: 22848** **Points: 1.00**

The plant has experienced a scram due to a loss of Feedwater transient, with the following:

- No injection sources available
- RPV water level has continued to drop
- RPV pressure is being controlled between 800 - 1000 psig

Which one of the following identifies the LOWEST ACTUAL RPV water level at which adequate core cooling, by any mechanism, is still maintained?

A. -14 inches.

B. -39 inches.

C. -55 inches.

D. -62 inches.

Answer: C

Associated objective(s):

LC2 03-01 NRC EXAM DEVELOPMENT AREA

Question 17 Details

Question Type:	Multiple Choice
Topic:	NRC RO 17
System ID:	22848
User ID:	
Status:	Active
Must Appear:	No
Difficulty:	0.00
Time to Complete:	0
Point Value:	1.00
Cross Reference:	LC2 03-01
User Text:	
User Number 1:	0.00
User Number 2:	0.00
Comment:	Question derived from bank SYSID 16587

O2-OPS-006-344-2-01 - EO-1.2

Answer:	C is correct - with no injection sources available, the NMP2 EOP Basis Document indicates that ACC exists as long as RPV water level is above the Minimum Zero Injection RPV Water Level.
Distractor:	A and B are incorrect. TAF (-14 inches) and MSCRWL (-39 inches) are both higher than Minimum Zero Injection RPV Water Level (-55 inches)
Distractor:	D is incorrect. 2/3 Core Height (-62 inches) is below MZIRWL and requires 6350 gpm Core Spray flow injection.

References Provided: None

Question 17 Cross References (table item links)

10CFR55
- 41(b)(10)

Cognitive Level
- 1

NUREG 1123 KA Catalog Rev. 2
- 295031 EA2.04 4.6*/4.8*, Ability to determine and/or interpret the following as they apply to REACTOR LOW WATER LEVEL: Adequate core cooling

Level of Difficulty
- Level 3: Higher order Knowledge item

LP
- O2-OPS-006-344-2-01 Rev. NA

Question Source
- Bank

PROC
- N2-EOP-RPV Rev. NA
- N2-EOP-BASES Rev. NA

Question Setting
- C1 (License class closed reference)

18 **SYSID: 22849** **Points: 1.00**

The plant is operating at 100%, with the following:

0900	Annunciator 601712 SLCS TANK 1 LEVEL HIGH/LOW alarms
0905	Operator reports NO air bubbler flow observed at local SLS Storage Tank level instrument indicator for 2SLS*FIC103 (Reactor Building 289).
0908	MSIVs automatically close
0908	RPV Pressure peaks at about 1125 psig
0910	Reactor power is 10%

Which one of the following describes the effects of these conditions on SLS pump start capability and SLS Tank level indication at P601?

	<u>SLS Pumps</u>	<u>SLS Tank Level Indication</u>
A.	Start	Downscale
B.	Start	Upscale
C.	Can't Start	Downscale
D.	Can't Start	Upscale

Answer: A

Associated objective(s):

LC2 03-01 NRC EXAM DEVELOPMENT AREA

Question 18 Details

Question Type:	Multiple Choice
Topic:	NRC RO 18
System ID:	22849
User ID:	
Status:	Active
Must Appear:	No
Difficulty:	0.00
Time to Complete:	0
Point Value:	1.00
Cross Reference:	LC2 03-01
User Text:	
User Number 1:	0.00
User Number 2:	0.00
Comment:	O2-OPS-001-211-2-00 EO-1.5

Answer: A is correct. SLS Tank level indication is supplied from air bubble dip tube arrangement. On loss of the air signal tank level indication fails downscale resulting in storage tank low level alarm. The SLS pumps will still automatically start after a 98 second time delay with APRM power of 10% (above the APRM downscale setpoint of 4%). The SLS pumps have a start permissive and trip on low SLS tank level, but these signals are generated by the four RRCS tank level transmitters, which are not effected by the loss of air pressure. These are differential pressure transmitters connected directly to the SLS storage tank.

Distractor: B is incorrect, because on loss of the air signal tank level indication fails downscale, not upscale.

Distractor: C and D are incorrect, because The SLS pumps have a start permissive and trip on low SLS tank level that is generated by the four RRCS tank level transmitters, which are not effected by the loss of air pressure. The SLS pumps will start.

References Provided: None

Question 18 Cross References (table item links)

10CFR55

- 41(b)(10)

Cognitive Level

- 2

NUREG 1123 KA Catalog Rev. 2

- 295037 EA2.03 4.3*/4.4*, Ability to determine and/or interpret the following as they apply to SCRAM CONDITION PRESENT AND REACTOR POWER ABOVE APRM DOWNSCALE OR UNKNOWN: SBLC tank level

Level of Difficulty

- Level 3: Higher order Knowledge item

LP

- O2-OPS-001-211-2-00 Rev. NA

Question Source

- New

PROC

- N2-OP-36A Rev. NA

Question Setting

- C1 (License class closed reference)

EXAMINATION ANSWER KEY

U2 NRC REACTOR OPERATOR WRITTEN EXAMINATION 2005

19 **SYSID: 22850** **Points: 1.00**

The plant is operating at power, with the following:

- Stack GEMS radiation reading is normal
- Vent GEMS radiation reading is higher than normal

Which one of the following identifies the possible release source?

A. Above Refuel Floor Ventilation exhaust.

B. Main Steam Tunnel Ventilation exhaust.

C. Standby Gas Treatment fan discharge.

D. Mechanical Vacuum Pump discharge.

Answer: A

Associated objective(s):

LC2 03-01 NRC EXAM DEVELOPMENT AREA

Question 19 Details

Question Type:	Multiple Choice
Topic:	NRC RO 19
System ID:	22850
User ID:	
Status:	Active
Must Appear:	No
Difficulty:	0.00
Time to Complete:	0
Point Value:	1.00
Cross Reference:	LC2 03-01
User Text:	
User Number 1:	0.00
User Number 2:	0.00
Comment:	Question derived from bank SYSID 16575

O2-OPS-001-288-2-03 - EO-1.4

Answer: A is correct - the Above Refuel Floor Ventilation exhaust discharges to the Reactor/Radwaste Building Vent Stack.

Distractor: B, C, D are incorrect. These systems discharge to the Main Stack via their respective ventilation systems.

References Provided: None

Question 19 Cross References (table item links)

10CFR55
- 41(b)(7)

Cognitive Level
- 1

NUREG 1123 KA Catalog Rev. 2
- 295038 EA1.01 3.9/4.2; Ability to operate and/or monitor the following as they apply to HIGH OFF-SITE RELEASE RATE: Stack-gas monitoring system: Plant-Specific

Level of Difficulty
- Level 2: System operation and response

LP
- O2-OPS-001-288-2-03 Rev. na

Question Source
- Bank

PROC
- N2-OP-52 Rev. NA

Question Setting
- C1 (License class closed reference)

20 **SYSID: 22851** **Points: 1.00**

The plant is operating at 100% power, with the following:

- Annunciator 849105 FIRE DETECTED PNL127 SW STAIR / 237 (for the Control Building El 237) alarms
- Fire is confirmed
- HVC*ACU1A, CONTROL ROOM AC FAN trip
- HVC*ACU2A, RELAY ROOM AC FAN trip

Which one of the following identifies the actions required to be taken for Control Building Ventilation (HVC) and the reason?

A. Actuate Appendix R disconnects to prevent tripping the Division II ACUs due to faulty electrical circuits.

B. Actuate Appendix R disconnects to place HVC in a lineup that ensures the Control Room Envelope pressure does not become negative.

C. Defeat cross divisional interlocks to ensure Control Room Envelope temperature can be maintained 90°F or less.

D. Defeat cross divisional interlocks to prevent a Control Room evacuation due to smoke infiltration.

Answer: C

Associated objective(s):

LC2 03-01 NRC EXAM DEVELOPMENT AREA

Question 20 Details

Question Type:	Multiple Choice
Topic:	NRC RO 20
System ID:	22851
User ID:	
Status:	Active
Must Appear:	No
Difficulty:	0.00
Time to Complete:	0
Point Value:	1.00
Cross Reference:	LC2 03-01
User Text:	
User Number 1:	0.00
User Number 2:	0.00
Comment:	O2-OPS-001-288-2-02 EO-1.7

Answer: C is correct. Per ARP 849105, N2-OP53A off normal section H.14.0 is required to be performed immediately, to defeat the HVC cross divisional interlocks. Implementation of this section directs the starting of Div II ACUs and using the cross divisional interlock key lock override switch to prevent loss of Div II components because of fire affecting Div I components. Note 2 states this is required to maintain Control Room Envelope temperature below 90°F.

Distractor: A is incorrect. The Appendix R switches do not prevent ACU tripping. This function is performed by the cross divisional interlock override switch.

Distractor: B. is incorrect. Actuating Appendix R disconnects will not place the Control Room and Relay Room HVC ACUs in the correct lineup. ACUs do not realign when Appendix R switches are actuated.

Distractor: D is incorrect. N2-OP-53A H.14.0 Note 2 states this is required to maintain Control Room Envelope temperature below 90°F not to maintain positive pressure. This action is not taken prevent a Control Room evacuation to due smoke infiltration.

References Provided: None

Question 20 Cross References (table item links)

10CFR55
- 41(b)(10)

Cognitive Level
- 2

NUREG 1123 KA Catalog Rev. 2
- 600000 AK3.04 2.8/3.4; Knowledge of the reasons for the following responses as they apply to PLANT FIRE ON SITE: Actions contained in the abnormal procedure for plant fire on site

Level of Difficulty
- Level 4: Highest order knowledge

Question Source
- New

PROC
- N2-OP-53A Rev. NA
- N2-ARP-01, Rev. NA, 849105

Question Setting
- C1 (License class closed reference)

21 **SYSID: 22852** **Points: 1.00**

A plant startup is in progress, with the following:

- RPV Pressure is 800 psig
- EHC Regulator Pressure Set is 800 psig
- Turbine Bypass Valve #1 is 50% open with all others closed
- Feedwater Pump A is injecting with LV55A in MANUAL
- RPV Water Level is steady at 183 inches
- THEN.....a control rod is withdrawn AND APRM power rises and stabilizes at a higher value

Which one of the following describes the effect of these conditions on RPV Water Level and the reason?

A. Rises because steam flow is less than feed flow.

B. Lowers because steam flow is greater than feed flow.

C. Remains constant because steam flow and feed flow have NOT changed.

D. Remains constant because steam flow and feed flow changed by equal amounts.

Answer: B

Associated objective(s):

LC2 03-01 NRC EXAM DEVELOPMENT AREA

Question 21 Details

Question Type:	Multiple Choice
Topic:	NRC RO 21
System ID:	22852
User ID:	
Status:	Active
Must Appear:	No
Difficulty:	0.00
Time to Complete:	0
Point Value:	1.00
Cross Reference:	LC2 03-01
User Text:	
User Number 1:	0.00
User Number 2:	0.00
Comment:	O2-OPS-001-259-2-01 - EO-1.4

Answer:	B is correct. Level will lower because as power rises, steam flow will rise as BPV #1 opens to maintain pressure at 800 psig. With LV55A in MANUAL, feed flow will remain constant and steam flow will rise.
Distractor:	A is incorrect. Level will lower, not rise. Steam flow will rise as BPV #1 opens to maintain pressure at 800 psig.
Distractor:	C and D are incorrect. Level will change if steam flow changes and feedwater control is MANUAL

References Provided: None

Question 21 Cross References (table item links)

10CFR55
- 41(b)(10)

Cognitive Level
- 2

NUREG 1123 KA Catalog Rev. 2
- 295009 AA2.02 3.6/3.7; Ability to determine and/or interpret the following as they apply to LOW REACTOR WATER LEVEL: Steam flow/feed flow mismatch

Level of Difficulty
- Level 2: System operation and response

LP
- O2-OPS-001-259-2-01 Rev. na

Question Source
- New

PROC
- N2-OP-3 Rev. NA

Question Setting
- C1 (License class closed reference)

22 **SYSID: 22853** **Points: 1.00**

The plant has experienced a LOCA, with the following:

- Drywell Pressure is 3.0 psig
- Hottest Drywell Temperature is 275°F
- Drywell Cooling Fans are tripped

Which one of the following describes the effect on restoring Drywell Cooling System (DRS) per EOP support procedures?

A. After defeating interlocks, system operation can be fully restored.

B. Without defeating interlocks, system operation can be fully restored.

C. Cannot be restored, restoring CCP flow may result in water hammer.

D. Cannot be restored, restarting DRS fans may result in air duct damage.

Answer: C

Associated objective(s):

LC2 03-01 NRC EXAM DEVELOPMENT AREA

Question 22 Details

Question Type:	Multiple Choice
Topic:	NRC RO 22
System ID:	22853
User ID:	
Status:	Active
Must Appear:	No
Difficulty:	0.00
Time to Complete:	0
Point Value:	1.00
Cross Reference:	LC2 03-01
User Text:	
User Number 1:	0.00
User Number 2:	0.00
Comment:	N2-EOP-6, Attachment 24 O2-OPS-006-344-2-04 - EO-1.2

Answer:	C is correct. Per N2-EOP-6 Attachment 24, if DWT is above 250°F, the containment isolation MOVs cannot be reopened, because the water volume in the section of piping between the inboard and outboard isolation valves may have flashed to steam due to the elevated DWT.
Distractor:	A and B are incorrect. Operation cannot be restored with DWT above 250°F
Distractor:	D is incorrect. DRS Fans are not the component identified as the potential cause of damage.

References Provided: None

Question 22 Cross References (table item links)

10CFR55

- 41(b)(7)

Cognitive Level

- 1

NUREG 1123 KA Catalog Rev. 2

- 295012 AK2.02 3.6/3.7, Knowledge of the interrelations between HIGH DRYWELL TEMPERATURE and the following: Drywell cooling

Level of Difficulty

- Level 2: System operation and response

LP

- O2-OPS-006-344-2-04 Rev. na

Question Source

- New

PROC

- N2-EOP-PC Rev. NA
- N2-EOP-6 ATT. 24, Rev. NA

Question Setting

- C1 (License class closed reference)

23 **SYSID: 22854** **Points: 1.00**

The plant is operating at 90% power, with the following:

0700	Annunciator 603443 CONTROL ROD DRIFT alarms
0700	Control Rod 22-43 is observed to be at position 12 then 14 and still moving
0700	Appropriate SOPs are entered by the crew
0703	Control Rod 22-43 is being moved to the fully inserted position
0703	Control Rod 18-27 is observed to be at position 02 then 04 and still moving

Which one of the following describes the actions required to be taken and why?

A. Fully insert all moving control rods to terminate the power rise.

B. Fully insert and disarm the moving control rods to comply with Tech Specs.

C. Reduce power to about 85% to provide adequate margin to Thermal Limits.

D. Place the Mode Switch to SHUTDOWN to terminate the power rise.

Answer: D

Associated objective(s):

LC2 03-01 NRC EXAM DEVELOPMENT AREA

Question 23 Details

Question Type:	Multiple Choice
Topic:	NRC RO 23
System ID:	22854
User ID:	
Status:	Active
Must Appear:	No
Difficulty:	0.00
Time to Complete:	0
Point Value:	1.00
Cross Reference:	LC2 03-01
User Text:	
User Number 1:	0.00
User Number 2:	0.00
Comment:	O2-OPS-006-SOP-2-03, EO-3.2

Answer:	D is correct. Per N2-SOP-8, more than one control rod drifting requires a reactor scram.
Distractor:	A is incorrect. Drifting rods are not inserted to stop power rise. They are inserted to be disarmed such that Tech Specs compliance is maintained.
Distractor:	B is incorrect. If only one rod were drifting this action is correct. With multiple rods drifting a scram is required.
Distractor:	C is incorrect. Power reduction is appropriate but only if the scram was not required for multiple rods drifting.

References Provided: None

Question 23 Cross References (table item links)

10CFR55
- 41(b)(5)

Cognitive Level
- 1

NUREG 1123 KA Catalog Rev. 2
- 295014 AK3.01 4.1*/4.1, Knowledge of the reasons for the following responses as they apply to INADVERTENT REACTIVITY ADDITION: Reactor SCRAM

Level of Difficulty
- Level 3: Higher order Knowledge item

LP
- O2-OPS-006-SOP-2-03, Rev. NA

Question Source
- New

PROC
- N2-SOP-8 Rev. NA

Question Setting
- C1 (License class closed reference)

24 **SYSID: 22855** **Points: 1.00**

The plant is operating at 100% power, with the following:

- A transient results in an automatic Reactor Scram
- 32 control rods insert to Position 00
- All remaining control rods insert to Position 02

Which one of the following describes the CURRENT rod pattern with respect to EOPs and Tech Specs Shutdown Margin (SDM)?

	Shutdown Per EOPs	SDM Pattern Achieved
A.	Yes	Yes
B.	Yes	No
C.	No	No
D.	No	Yes

Answer: B

Associated objective(s):

LC2 03-01 NRC EXAM DEVELOPMENT AREA

Question 24 Details

Question Type:	Multiple Choice
Topic:	NRC RO 24
System ID:	22855
User ID:	
Status:	Active
Must Appear:	No
Difficulty:	0.00
Time to Complete:	0
Point Value:	1.00
Cross Reference:	LC2 03-01
User Text:	
User Number 1:	0.00
User Number 2:	0.00
Comment:	O2-OPS-006-344-2-01 EO-1.2

Answer: B is correct. Per EOP-RPV and EOP-C5 basis, the reactor will remain shutdown without boron if NO rods are withdrawn past 02 (Maximum Subcritical Banked Withdrawal Position MSBWP). Currently this condition IS met, therefore the reactor IS shutdown. TS SDM definition for rod positions is all rods fully inserted except for a single rod, which is assumed to be fully withdrawn. Definition condition is NOT achieved.

Distractor: A and D are incorrect. The Tech Spec Shutdown Margin (SDM) definition assumptions for control rod positions has not been achieved because 184 rods are not inserted to 00.

Distractor: C is incorrect. The reactor IS shutdown per EOPs because MSBWP conditions are achieved.

References Provided: None

Question 24 Cross References (table item links)

10CFR55
- 41(b)(10)

Cognitive Level
- 2

NUREG 1123 KA Catalog Rev. 2
- 295015 AK1.01 3.6*/3.9*, Knowledge of the operational implications of the following concepts as they apply to INCOMPLETE SCRAM: Shutdown margin

Level of Difficulty
- Level 3: Higher order Knowledge item

LP
- O2-OPS-006-344-2-01 Rev. NA

Question Source
- New

PROC
- EOP BASIS DOCUMENT Rev. na

Question Setting
- C1 (License class closed reference)

25 **SYSID: 22856** **Points: 1.00**

A plant startup is in progress, with the following:

- Reactor Pressure is 500 psig
- The operating Control Rod Drive (RDS) Pump trips
- No RDS Pump can be started
- A Control Rod at position 12 has an accumulator pressure of 900 psig

Which one of the following describes when a manual scram is required to be initiated per N2-SOP-30, Control Rod Failures?

A. Immediately.

B. In 20 minutes.

C. If one control rod drifts in.

D. If any other control rod accumulator becomes inoperable.

Answer: A

Associated objective(s):

LC2 03-01 NRC EXAM DEVELOPMENT AREA

Question 25 Details

Question Type:	Multiple Choice
Topic:	NRC RO 25
System ID:	22856
User ID:	
Status:	Active
Must Appear:	No
Difficulty:	0.00
Time to Complete:	0
Point Value:	1.00
Cross Reference:	LC2 03-01
User Text:	
User Number 1:	0.00
User Number 2:	0.00
Comment:	O2-OPS-001-201-2-01, EO-1.8

Answer: A is correct - SOP-30 calls for immediate scram if reactor pressure is <900# and CRD charging water pressure is <940# and any accumulator is inop with its associated rod withdrawn.

Distractor: B/C/D incorrect - All conditions not met per SOP-30

References Provided: None

Question 25 Cross References (table item links)

10CFR55
- 41(b)(10)

Cognitive Level
- 2

NUREG 1123 KA Catalog Rev. 2
- G2.1.23 3.9/4 Ability to perform specific system and integrated plant procedures during different modes of plant operation
- 295022, Loss of CRD Pumps, Rev. NA

Level of Difficulty
- Level 3: Higher order Knowledge item

LP
- O2-OPS-001-201-2-01 Rev. na

Question Source
- Bank

PROC
- N2-SOP-30 Rev. NA

Question Setting
- C1 (License class closed reference)

26 **SYSID: 22857** **Points: 1.00**

The plant is operating at 100% power, with the following:

0800	HVR*RE32A-1 BELOW REFUELING FLOOR OFFLINE GAS MONITOR indicates RED on DRMS display
0805	Reactor Water Cleanup System WCS Pump Room A temperature is 160°F and steady
0805	WCS*MOV102, CLEANUP SUCT INBOARD ISOL VLV AND WCS*MOV112, CLEANUP SUCT OUTBOARD ISOL VLV are still open
0820	Radiation monitor RMS2A on Reactor Building Elevation 215 is reading 9.2 E+03 mR/hr steady and indicating RED on DRMS display
0820	Radiation monitor RMS2B on Reactor Building Elevation 215 is reading 8.2 E+03 mR/hr steady and indicating RED on DRMS display

Which one of the following describes the proper implementation of EOP-SC with regards to area radiation levels?

A. Only one area is affected by elevated radiation levels. Continue to try to isolate WCS system. A normal plant shutdown is NOT required.

B. Two areas are affected by elevated radiation levels. A normal plant shutdown IS required. RPV Blowdown is NOT required.

C. Only one area is affected by elevated radiation levels. A manual scram IS required but an RPV Blowdown is NOT required.

D. Two areas are affected by elevated radiation levels. A manual scram IS required AND an RPV Blowdown IS required.

Answer: D

Associated objective(s):

LC2 03-01 NRC EXAM DEVELOPMENT AREA

Question 26 Details

Question Type:	Multiple Choice
Topic:	NRC RO 26
System ID:	22857
User ID:	
Status:	Active
Must Appear:	No
Difficulty:	0.00
Time to Complete:	0
Point Value:	1.00
Cross Reference:	LC2 03-01
User Text:	
User Number 1:	0.00
User Number 2:	0.00
Comment:	O2-OPS-006-344-2-08 EO-1.2

Answer:	D is correct. Per the TMG, each area radiation monitor is treated as a separate area. IF RMS2A and 2B are reading above Max Safe Values, then 2 areas are affected and a Blowdown is required by EOP-SC Step SC-10
Distractor:	A is incorrect. Two areas are affected, not one.
Distractor:	B is incorrect. These actions are directed from SC-6 step. IF a primary system were not discharging into the area, this would be correct. Based on temperatures AND radiation levels, a primary system IS discharging into the Reactor Building, so SC-10 applies.
Distractor:	C is incorrect. A scram is required and so is an RPV Blowdown with 2 areas affected. IF RMS2A and 2B were treated as the same area because they are on the same floor within the Reactor Building, this would be correct. This is not the correct application of "areas" per the TMG.

References Provided: N2-EOP-SC.

Question 26 Cross References (table item links)

10CFR55

- 41(b)(5)

Cognitive Level

- 2

NUREG 1123 KA Catalog Rev. 2

- 295033 EA2.01 3.8/3.9, Ability to determine and/or interpret the following as they apply to SECONDARY CONTAINMENT AREA RADIATION LEVELS: Area radiation levels

Level of Difficulty

- Level 2: System operation and response

LP

- O2-OPS-006-344-2-08 Rev. NA

Question Source

- New

PROC

- N2-EOP-SC Rev. NA

Question Setting

- C1 (License class closed reference)

27 **SYSID: 22858** **Points: 1.00**

The plant has experienced a LOCA, with the following:

- All rods are full in
- Reactor pressure is 200 psig and slowly lowering
- Reactor level is 102 inches and steady
- Suppression Pool level is 211.8 feet and rising

Which one of the following injection systems is allowed to be used to maintain reactor level per the Emergency Operating Procedures?

A. RDS

B. Condensate

C. RHS in the LPCI mode

D. RCIC with suction aligned to the CST

Answer: C

Associated objective(s):

LC2 03-01 NRC EXAM DEVELOPMENT AREA

Question 27 Details

Question Type:	Multiple Choice
Topic:	NRC RO 27
System ID:	22858
User ID:	
Status:	Active
Must Appear:	No
Difficulty:	0.00
Time to Complete:	0
Point Value:	1.00
Cross Reference:	LC2 03-01
User Text:	
User Number 1:	0.00
User Number 2:	0.00
Comment:	O2-OPS-006-344-2-04 - EO-1.2

Answer: **C** is correct. With S/P level high (above 211.7 feet @ 200 psig), N2-EOP-PC, SPL-2 calls for injection sources that do not add to containment inventory

Distractor: **A/B/D** incorrect - all inject from outside sources.

References Provided: N2-EOP-RPV, N2-EOP-PC

Question 27 Cross References (table item links)

10CFR55
- 41(b)(7)

Cognitive Level
- 2

NUREG 1123 KA Catalog Rev. 2
- 295029 EA1.03 2.9/3, Ability to operate and/or monitor the following as they apply to HIGH SUPPRESSION POOL LEVEL: RHR/LPCI

Level of Difficulty
- Level 2: System operation and response

LP
- O2-OPS-006-344-2-04 Rev. na

Question Source
- Bank

PROC
- N2-EOP-PC Rev. NA
- N2-EOP-RPV Rev. NA

Question Setting
- C1 (License class closed reference)

28 **SYSID: 22859** **Points: 1.00**

The plant is experiencing a DBA LOCA, with the following:

- ALL RHS Pumps automatically started
- ALL RHS Injection MOVs are stroking open
- THEN......Annunciator 601448 RHR A SYSTEM VALVES MOTOR OVERLOAD alarms AND
- P601 amber STATUS LIGHT LPCI A INJECT VLV RHS*MOV24A is lit

Which one of the following identifies the effect of these conditions on operation of RHS*MOV24A LPCI A INJECTION VLV?

A. Continues to travel open then remains full open.

B. Continues to travel open then strokes full closed.

C. Stops and cannot be opened from the control room.

D. Stops but can be throttled open from the control room.

Answer: C

Associated objective(s):

LC2 03-01 NRC EXAM DEVELOPMENT AREA

Question 28 Details

Question Type:	Multiple Choice
Topic:	NRC RO 28
System ID:	22859
User ID:	
Status:	Active
Must Appear:	No
Difficulty:	0.00
Time to Complete:	0
Point Value:	1.00
Cross Reference:	LC2 03-01
User Text:	
User Number 1:	0.00
User Number 2:	0.00
Comment:	O2-OPS-001-205-2-00 EO-1.7

Answer: C is correct. Per N2-ARP-01 601448 and INOP STATUS light response, the breaker is open or fuse is blown. The MOV cannot be opened from the control room. With 601448 actuated a possible cause is the thermal overload trip. Since the INOP STATUS light also lit , the breaker is tripped, not the thermal overloads.

Distractor: A and B are incorrect. If the INOP STATUS light were not lit and computer point RHSTC15 were indicated, then a thermal overload trip has occurred and MOV would continue to travel to full open.

Distractor: D is incorrect but will result if thermal overloads trip and no LOCA signal is present.

References Provided: None

Question 28 Cross References (table item links)

10CFR55
- 41(b)(7)

Cognitive Level
- 2

NUREG 1123 KA Catalog Rev. 2
- G2.4.31 3.3/3.4 Knowledge of annunciators alarms and indications, and use of the responseinstructions
- 203000 RHR/LPCI: INJECTION MODE

Level of Difficulty
- Level 3: Higher order Knowledge item

LP
- O2-OPS-001-205-2-00 Rev. NA

Question Source
- New

PROC
- N2-ARP-01 Rev. NA

Question Setting
- C1 (License class closed reference)

29 **SYSID: 22860** **Points: 1.00**

The plant is in MODE 4, with the following:

- Both Recirc Pumps are idle
- RHS A loop is running in Shutdown Cooling
- RHS A loop flow is 7450 gpm
- THEN RHS*MOV40A partially closes due to circuit malfunction resulting in RHS loop flow of 5500 gpm

Which one of the following identifies the consequences of the transient?

A. RPV heatup and subsequent pressurization.

B. RPV low water level isolation.

C. RHS heat exchanger overheating.

D. NMS incore instruments damage.

Answer: A

Associated objective(s):

LC2 03-01 NRC EXAM DEVELOPMENT AREA

Question 29 Details

Question Type:	Multiple Choice
Topic:	NRC RO 29
System ID:	22860
User ID:	
Status:	Active
Must Appear:	No
Difficulty:	0.00
Time to Complete:	0
Point Value:	1.00
Cross Reference:	LC2 03-01
User Text:	
User Number 1:	0.00
User Number 2:	0.00
Comment:	O2-OPS-001-205-2-00 EO-1.6

N2-OP-31 D5.0/5.1/4.0

Answer:	A is correct because reducing cooling flow can result in thermal stratification, which will result in rising temperature in the RPV. Rising temperature will cause pressure increase.
Distractor:	B is incorrect. Changing flow on shutdown cooling will have no significant effect on level.
Distractor:	C is incorrect. Heat exchanger cooling water flow is not affected, and is sufficient to prevent overheating.
Distractor:	D is incorrect. Incore instruments are rated for high temperature, high pressure applications, but this is a concern in Mode 5, with fuel removed from surrounding areas.

References Provided: None

Question 29 Cross References (table item links)

10CFR55
- 41(b)(5)

Cognitive Level
- 2

NUREG 1123 KA Catalog Rev. 2
- 205000 K5.02 2.8/2.9 Valve operation

Level of Difficulty
- Level 2: System operation and response

LP
- O2-OPS-001-205-2-00 Rev. NA

Question Source
- Bank

Question Setting
- C1 (License class closed reference)

EXAMINATION ANSWER KEY

U2 NRC REACTOR OPERATOR WRITTEN EXAMINATION 2005

30 **SYSID: 22861** **Points: 1.00**

The plant is in cold shutdown with Low Pressure Core Spray system being placed in a Full Flow Test lineup for pump operability testing, with the following:

- CSL*FV114, TEST RETURN TO SUPPR POOL THROTTLE is throttled to 6400 gpm
- Just as this flow is achieved, the thermal overloads trip for CSL*FV114
- THEN a circuit malfunction results in LPCI A/LPCS RESET white seal-in light illuminating and initiating CSL system response

Which one of the following identifies the resulting CSL system flow, two minutes after the system response begins?

A. 0 gpm through test and injection lines with flow through min flow line.

B. 0 gpm through test line and rated flow through injection line.

C. 6400 gpm through test line with 0 gpm through injection line.

D. Runout flow split through both test and injection lines.

Answer: B

Associated objective(s):

LC2 03-01 NRC EXAM DEVELOPMENT AREA

Question 30 Details

Question Type:	Multiple Choice
Topic:	NRC RO 30
System ID:	22861
User ID:	
Status:	Active
Must Appear:	No
Difficulty:	0.00
Time to Complete:	0
Point Value:	1.00
Cross Reference:	LC2 03-01
User Text:	
User Number 1:	0.00
User Number 2:	0.00
Comment:	O2-OPS-001-209-2-00 EO-1.4

Answer:	B is correct. CSL*FV114, TEST RETURN TO SUPPR POOL THROTTLE receives a CLOSE signal on system initiation. Thermal overload tripping DOES NOT stop FV114 from stroking full closed. Thermal overload only provides an alarm and computer point and since this is a throttle valve, movement is not affected. The initiation signal contact in the valve close circuit bypasses the control switch contacts. Since RPV pressure is 0 psig while in Cold Shutdown, the injection valve MOV104 will auto open and rated flow through the injection line results. The 88 psid permissive for injection MOV opening is met. This design feature/interlock allows for testing and system realignment for injection with an initiation signal present. The two minute time frame accounts for the stroke time of FV114 (about 1:30 minutes).
Distractor:	A is incorrect but this condition will result if RPV pressure is above the 88 psid permissive signal and FV114 still repositions to full closed.
Distractor:	C is incorrect but this condition will result if RPV pressure is above the 88 psid permissive signal and FV114 thermal overload trip prevented the test return valve from repositioning.
Distractor:	D is incorrect but can result if the injection valve MOV104 auto opens and FV114 thermal overload trip prevented the test return valve from repositioning.

References Provided: None

Question 30 Cross References (table item links)

10CFR55
- 41(b)(7)

Cognitive Level
- 2

NUREG 1123 KA Catalog Rev. 2
- 209001 K4.07 2.8/3, Knowledge of LOW PRESSURE CORE SPRAY SYSTEM design feature(s) and/or interlocks which provide for the following: Pump operability testing

Level of Difficulty
- Level 3: Higher order Knowledge item

LP
- O2-OPS-001-209-2-00 Rev. na

Question Source
- New

PROC
- N2-OP-32 Rev. NA
- N2-OSP-CSL-Q@002 Rev. NA

Question Setting
- C1 (License class closed reference)

31 **SYSID: 22862** **Points: 1.00**

The plant is experiencing a LOCA transient, with the following:

- RPV Pressure is 900 psig
- RPV Water Level is -60 inches (indicated) and steady
- Drywell Pressure is 7.0 psig and steady
- High Pressure Core Spray (CSH) is injecting as the ONLY available RPV injection source

Which one of the following describes the contribution of CSH injection, as it relates to establishing and maintaining Adequate Core Cooling (ACC), per the EOP Basis Document?

CSH injection....

A. IS providing ACC by complete core submergence. Steam Cooling does NOT provide ACC during the transient.

B. IS providing ACC by Core Spray Cooling and submergence. Steam Cooling does NOT provide ACC during the transient.

C. IS NOT providing ACC now but will after Blowdown is performed. Steam Cooling provides ACC during the transition.

D. IS NOT providing ACC now and will NOT after Blowdown is performed. Steam Cooling does NOT provide ACC during the transient.

Answer: C

Associated objective(s):

LC2 03-01 NRC EXAM DEVELOPMENT AREA

Question 31 Details

Question Type:	Multiple Choice
Topic:	NRC RO 31
System ID:	22862
User ID:	
Status:	Active
Must Appear:	No
Difficulty:	0.00
Time to Complete:	0
Point Value:	1.00
Cross Reference:	LC2 03-01
User Text:	
User Number 1:	0.00
User Number 2:	0.00
Comment:	O2-OPS-006-344-2-20, EO-1.1

Answer: C is correct. ACC currently NOT achieved with RPV level below TAF. At 900 psig indicated level of -54 inches would be equivalent to TAF. Also at 900 psig, CSH flow is below the 6350 gpm required for Core Spray Cooling in EOP-RPV step L-16. Between TAF (-54 inches indicated) and MSCRWL (-72 inches indicated), Steam Cooling is the mechanism that provides ACC (EOP Basis page 3-1 and 3-2) until the Blowdown is performed. After the Blowdown, ACC will be achieved either by CSH restoring level above TAF, which it now can because at low pressure, CSH flow will be closer to design flow OR achieving design spray flow 6350 gpm with level above -62 inches.

Distractor: A is incorrect. ACC currently NOT achieved by complete core submergence with RPV level below TAF. At 900 psig indicated level of -54 inches would be equivalent to TAF.

Distractor: B is incorrect. Also at 900 psig, CSH flow is below the 6350 gpm required for Core Spray Cooling in EOP-RPV step L-16.

Distractor: D is incorrect. After Blowdown CSH flow will be sufficient to turn level and restore above TAF. Also the statement that *"Steam Cooling does NOT provide ACC during the transient."* ..... is NOT true. With level above MSCRWL ACC does exist

References Provided: N2-EOP-RPV

Question 31 Cross References (table item links)

10CFR55

- 41(b)(8)

Cognitive Level

- 2

NUREG 1123 KA Catalog Rev. 2

- 209002 K1.11 3.8/4 Knowledge of the physical connections and/or cause and effect relationship between HIGH PRESSURE CORE SPRAY system and the following: Adequate core cooling: BWR-5,6

Level of Difficulty

- Level 3: Higher order Knowledge item

LP

- O2-OPS-006-344-2-20, Rev. NA

Question Source

- New

PROC

- N2-EOP-RPV Rev. NA

Question Setting

- C1 (License class closed reference)

32 **SYSID: 22863** **Points: 1.00**

The plant is operating at 100% power, with the following:

- Suppression Pool Water Level is slowly rising from an unknown source
- High Pressure Core Spray (CSH) is operating in a full flow test lineup from CST to CST
- CSH flow is being maintained at 6350 gpm
- THEN... Suppression Pool (SP) Water Level reaches 200.9 feet

Which one of the following describes effect of these conditions on CSH system flow and operating lineup?

A. Remains at 6350 gpm, CST Test Return Valves remain open with suction still being supplied from the CST.

B. Remains at 6350 gpm, CST Test Return Valves remain open while suction is automatically shifted to the SP.

C. Lowers to minimum flow as the CST Test Return Valves stroke closed. Suction is then automatically shifted to the SP.

D. Lowers to minimum flow as the CST Test Return Valves stroke closed. Suction still being supplied from the CST.

Answer: A

Associated objective(s):

LC2 03-01 NRC EXAM DEVELOPMENT AREA

Question 32 Details

Question Type:	Multiple Choice
Topic:	NRC RO 32
System ID:	22863
User ID:	
Status:	Active
Must Appear:	No
Difficulty:	0.00
Time to Complete:	0
Point Value:	1.00
Cross Reference:	LC2 03-01
User Text:	
User Number 1:	0.00
User Number 2:	0.00
Comment:	O2-OPS-001-205-2-00 EO-1.4

Answer: A is correct. Test Return Valves will remain open, since CSH Initiation signal is not present. The Suppression Pool Suction Valve MOV118 will NOT auto open under the present lineup, because CST Test Return Valves and NOT full closed. The automatic suction transfer (swap) will not occur. No system lineup change results and flow remains at 6350 gpm.

Distractor: B is incorrect. The Suppression Pool Suction Valve MOV118 will NOT auto open under the present lineup, because CST Test Return Valves and NOT full closed. The automatic suction transfer (swap) will not occur.

Distractor: C and D are incorrect. CST Test Return Valves do not close unless an initiation signal was present. Then the CST Test Return Valves would close and the system would realign for minimum flow. With CST Test Returns closed an automatic suction swap could then occur.

References Provided: None

Question 32 Cross References (table item links)

10CFR55

- 41(b)(7)

Cognitive Level

- 2

NUREG 1123 KA Catalog Rev. 2

- 209002 A4.11 3.8/3.8, Ability to manually operate and/or monitor in the control room: System flow: BWR-5,6

Level of Difficulty

- Level 3: Higher order Knowledge item

LP

- O2-OPS-001-206-2-00 Rev. na

Question Source

- New

PROC

- N2-OP-33 Rev. NA

Question Setting

- C1 (License class closed reference)

33 **SYSID: 22864** **Points: 1.00**

The plant has experienced a transient, with the following:

- Both Reactor Water Cleanup (WCS) Pumps are running
- RPV water level is being controlled between 130 inches and 200 inches
- 2SLS*P1B, PMP 1B, keylock control switch is momentarily placed to PUMP B RUN position
- 2SLS*VEX3B, SQUIB VLV READY white light is now out
- 2SLS*MOV1B, SLC STORAGE TK OUTLET VLV remains closed

Which one of the following identifies the response of SLS Pump P1B and the WCS Pumps?

A. SLS Pump P1B starts and WCS pumps continue to run.

B. SLS Pump P1B starts and WCS pumps are tripped.

C. SLS Pump P1B does NOT start and WCS pumps continue to run.

D. SLS Pump P1B does NOT start and WCS pumps are tripped.

Answer: D

Associated objective(s):

LC2 03-01 NRC EXAM DEVELOPMENT AREA

Question 33 Details

Question Type:	Multiple Choice
Topic:	NRC RO 33
System ID:	22864
User ID:	
Status:	Active
Must Appear:	No
Difficulty:	0.00
Time to Complete:	0
Point Value:	1.00
Cross Reference:	LC2 03-01
User Text:	
User Number 1:	0.00
User Number 2:	0.00
Comment:	O2-OPS-001-211-2-00, EO-1.5

Answer:	D is correct. SLS Pumps will not start because the suction valve SLS*MOV1B is closed, preventing the start. WCS pumps will trip because placing the Control switch for Standby Liquid Control (SLS) Pump P1B in PUMP B RUN position will close WCS inboard containment isolation valve WCS*MOV102, which trips the WCS pumps. This occurs even if the SLS pump does not start, as the WCS isolation is initiated by the SLS pump control switch.
Distractor:	A and B are incorrect. SLS Pump P1B will NOT start unless the suction MOV1B is open.
Distractor:	C is incorrect. WCS pumps will trip when WCS inboard containment isolation valve WCS*MOV102 closes.

References Provided: None

Question 33 Cross References (table item links)

10CFR55

- 41(b)(5)

Cognitive Level

- 2

NUREG 1123 KA Catalog Rev. 2

- 211000 A3.06 4.0*/4.1*, Ability to monitor automatic operations of the STANDBY LIQUID CONTROL SYSTEM including: RWCU system isolation: Plant-Specific

Level of Difficulty

- Level 3: Higher order Knowledge item

LP

- O2-OPS-001-211-2-00 Rev. NA

Question Source

- Modified

PROC

- N2-OP-36A Rev. NA

Question Setting

- C1 (License class closed reference)

34 **SYSID: 22865** **Points: 1.00**

The plant is operating at 25%, with the following:

- MSIV6A has a faulty limit switch that is generating a < 92% open signal to RPS, with the valve full open
- THEN...MSIV7B fully closes due to a circuit malfunction

Which one of the following describes the status of RPS Trip System A and RPS Trip System B?

	Trip System A	Trip System B
A.	NOT tripped	NOT tripped
B.	NOT tripped	Tripped
C.	Tripped	NOT tripped
D.	Tripped	Tripped

Answer: C

Associated objective(s):

LC2 03-01 NRC EXAM DEVELOPMENT AREA

Question 34 Details

Question Type:	Multiple Choice
Topic:	NRC RO 34
System ID:	22865
User ID:	
Status:	Active
Must Appear:	No
Difficulty:	0.00
Time to Complete:	0
Point Value:	1.00
Cross Reference:	LC2 03-01
User Text:	
User Number 1:	0.00
User Number 2:	0.00
Comment:	O2-OPS-001-212-2-00 EO-1.4

Answer:	C is correct. MSIV A and B are arranged to trip RPS Trip System A (logic channel A1). No trip of RPS B occurs.
Distractor:	A and B are incorrect. Trip System A is tripped. A combination of MSIVs C and A OR B and D is required to trip RPS Trip System B.
Distractor:	D is incorrect. No trip of RPS B occurs. A combination of MSIVs C and A OR B and D is required to trip RPS Trip System B.

References Provided: None

Question 34 Cross References (table item links)

10CFR55

- 41(b)(5)

Cognitive Level

- 1

NUREG 1123 KA Catalog Rev. 2

- 212000 K5.02 3.3/3.4, Knowledge of the operational implications of the following concepts as they apply to REACTOR PROTECTION SYSTEM: Specific logic arrangements

Level of Difficulty

- Level 3: Higher order Knowledge item

LP

- O2-OPS-001-212-2-00 Rev. na

Question Source

- New

PROC

- N2-OP-97 Rev. NA

Question Setting

- C1 (License class closed reference)

35 **SYSID: 22866** **Points: 1.00**

A plant startup is in progress, with the following:

- Reactor Mode Switch is in STARTUP
- No control rods have been withdrawn
- All IRM's are downscale on range 1
- A loss of 24/48 VDC power to panel BWS-PNL300A occurs

Which one of the following describes the IRM impact on RPS?

A. No RPS trip system trips occur

B. RPS A trip system trips. RPS B trip system does not

C. RPS B trip system trips. RPS A trip system does not

D. Both RPS trip systems A and B trip

Answer: B

Associated objective(s):

LC2 03-01 NRC EXAM DEVELOPMENT AREA

Question 35 Details

Question Type:	Multiple Choice
Topic:	NRC RO 35
System ID:	22866
User ID:	
Status:	Active
Must Appear:	No
Difficulty:	0.00
Time to Complete:	0
Point Value:	1.00
Cross Reference:	LC2 03-01
User Text:	
User Number 1:	0.00
User Number 2:	0.00
Comment:	Question derived from bank SYSID 13741

O2-OPS-001-215-2-04 - EO-1.4

Answer: B is correct, Loss of 24/48 VDC power from BWS-PNL300A results in power loss to IRM A,C,E,G and trip of RPS trip system A
A and C are incorrect because RPS A trips. D is incorrect. IRM B,D,F,H are powered from BWS-PNL300B and are not affected.

Reference Provided: None

Question 35 Cross References (table item links)

10CFR55
- 41(b)(7)

Cognitive Level
- 1

NUREG 1123 KA Catalog Rev. 2
- 215003 K3.01 3.9/4; Knowledge of the effect that a loss or malfunction of the INTERMEDIATE RANGE MONITOR (IRM) SYSTEM will have on following: RPS

Level of Difficulty
- Level 2: System operation and response

LP
- O2-OPS-001-215-2-04, Rev. NA

Question Source
- Modified

PROC
- N2-OP-92 Rev. NA

Question Setting
- C1 (License class closed reference)

36 **SYSID: 22867** **Points: 1.00**

The following conditions exist for SRM A, during a plant startup:

- SRM A reads $1x10^5$cps
- SRMs are fully inserted
- 603203 SRM UPSC/INOPERABLE annunciator actuates
- 603442 CONTROL ROD OUT BLOCK annunciator actuates
- Amber SRM "UPSC ALARM OR INOP" light on P603 is lit
- Red SRM "UPSC TRIP" lights on P603 are off
- White "INOP" light at the drawer is off

Which one of the following actions is required, by procedure, to clear the Control Rod Out Block being generated by SRM A, and reason for that action?

A. Bypass channel to clear the INOP condition.

B. Bypass channel to clear the UPSC condition.

C. Retract detectors to clear the INOP condition.

D. Retract detectors to clear the UPSC condition.

Answer: D

Associated objective(s):

LC2 03-01 NRC EXAM DEVELOPMENT AREA

EXAMINATION ANSWER KEY

U2 NRC REACTOR OPERATOR WRITTEN EXAMINATION 2005

Question 36 Details

Question Type:	Multiple Choice
Topic:	NRC RO 36
System ID:	22867
User ID:	
Status:	Active
Must Appear:	No
Difficulty:	0.00
Time to Complete:	0
Point Value:	1.00
Cross Reference:	LC2 03-01
User Text:	
User Number 1:	0.00
User Number 2:	0.00
Comment:	Question derived from bank SYSID 13601

O2-OPS-001-215-2-03 - EO-1.4

Answer: D is correct based on conditions given. ANN 603203 is lit for an upscale condition, not an INOPERABLE condition. In the case of a startup, the correct action is to retract detectors from the core to reduce the indication level.

Distractor: A & C is incorrect because the information given supports upscale not Inoperable.

Distractor: B is incorrect because the detector remains operable.

References Provided: None

Question 36 Cross References (table item links)

10CFR55
- 41(b)(7)

Cognitive Level
- 2

NUREG 1123 KA Catalog Rev. 2
- G2.4.50 3.3/3 Ability to verify system alarm setpoints and operate controls identified in the alarm response manual
- 215004 Source Range Monitor

Level of Difficulty
- Level 3: Higher order Knowledge item

LP
- O2-OPS-001-215-2-03, Rev. NA

Question Source
- Bank

PROC
- N2-ARP-01 Rev. NA

Question Setting
- C1 (License class closed reference)

37 **SYSID: 22868** **Points: 1.00**

The plant is initially operating at 100% power, with the following:

- RCS Pump A now trips off
- N2-SOP-29, SUDDEN REDUCTION IN CORE FLOW has NOT yet been entered
- Refer to photos provided for current APRM status
- ALL APRM chassis read the same as APRM 2 (shown in photos)

Which one of the following identifies the **CURRENT** status of APRM 2 Scram and Rod Block Setpoints, for the indicated conditions?

A. Set for two loop operation and waiting for single loop operation setpoints to be enabled by Reactor Engineering.

B. Set for two loop operation and waiting for single loop operation setpoints to be enabled by I&C Technicians.

C. Set for single loop operation after setpoints being automatically enabled by RCS pump being in tripped condition.

D. Set for single loop operation after setpoints being manually enabled by the appropriate plant support personnel.

Answer: B

Associated objective(s):

LC2 03-01 NRC EXAM DEVELOPMENT AREA

Question 37 Details

Question Type:	Multiple Choice
Topic:	NRC RO 37
System ID:	22868
User ID:	
Status:	Active
Must Appear:	No
Difficulty:	0.00
Time to Complete:	0
Point Value:	1.00
Cross Reference:	LC2 03-01
User Text:	
User Number 1:	0.00
User Number 2:	0.00
Comment:	O2-OPS-001-215-2-01 EO-1.4

Answer: B is correct. Since "SLO ENABLED" on Fig 2 indicates NO, the single loop 5% reduction in the setpoint has not yet been applied by I&C technicians. This action is manually directed after notification from control room per N2-SOP-29, which has NOT yet been entered.

Distractor: A is incorrect. Since "SLO ENABLED" on Fig 2 indicates NO, the single loop 5% reduction in the setpoint has not yet been applied by I&C technicians. Reactor Engineering does NOT reset the scram and rod block setpoints but DOES reset thermal limits in 3D Monicore after being notified by the control room per N2-SOP-29

Distractor: C is incorrect. Single loop setpoints are not automatically enabled AND current status indicated shows the 2 loop settings are still in effect ("SLO ENABLED" on Fig 2 indicates NO)

Distractor: D is incorrect. Current status indicated shows the 2 loop settings are still in effect ("SLO ENABLED" on Fig 2 indicates NO). Setpoints have NOT been manually reset.

References provided: Picture of APRM (Included with question)

EXAMINATION ANSWER KEY

U2 NRC REACTOR OPERATOR WRITTEN EXAMINATION 2005

Question 37 Cross References (table item links)

10CFR55
- 41(b)(5)

Cognitive Level
- 2

NUREG 1123 KA Catalog Rev. 2
- 215005 A1.04 4.1/4.1, Ability to predict and/or monitor changes in parameters associated with operating the AVERAGE POWER RANGE MONITOR/LOCAL POWER RANGE MONITOR SYSTEM controls including: SCRAM and rod block trip setpoints

Level of Difficulty
- Level 2: System operation and response

Question Source
- New

PROC
- N2-OP-92 Rev. NA

Question Setting
- C1 (License class closed reference)

38 **SYSID: 22869** **Points: 1.00**

The plant has experienced a transient, with the following:

0759 Loss of power occurs to 2EHS*MCC302
0800 Loss of ALL Feedwater injection
0801 RPV water level lowers to 100 inches

Which one of the following identifies the effect on RCIC SYSTEM injection capability and why?

A. Injection capability is maintained with ICS*MOV121, TURB STM SUPPLY OUTBOARD ISOL VLV deenergized and open.

B. Injection capability is maintained with ICS*MOV128, TURBINE STM SUPPLY INBOARD ISOL VLV deenergized and open.

C. Injection capability is NOT maintained because ICS*MOV126, PMP 1 DISCH TO REACTOR is deenergized and closed.

D. Injection capability is NOT maintained because ICS*MOV150, TURBINE TRIP THROTTLE VLV is deenergized and tripped.

Answer: B

Associated objective(s):

LC2 03-01 NRC EXAM DEVELOPMENT AREA

Question 38 Details

Question Type:	Multiple Choice
Topic:	NRC RO 38
System ID:	22869
User ID:	
Status:	Active
Must Appear:	No
Difficulty:	0.00
Time to Complete:	0
Point Value:	1.00
Cross Reference:	LC2 03-01
User Text:	
User Number 1:	0.00
User Number 2:	0.00
Comment:	N2-ELU-01, Attachment 35 O2-OPS-001-217-2-00 EO-1.4

Answer:	B is correct. ICS*MOV128, TURBINE STM SUPPLY INBOARD ISOL VLV is 600VAC powered from 2EHS*MCC302-14A.
Distractor:	A is incorrect. ICS*MOV121, TURB STM SUPPLY OUTBOARD ISOL VLV is 600 VAC powered from 2EHS*MCC102-17C.
Distractor:	C is incorrect. ICS*MOV126, PMP 1 DISCH TO REACTOR is 125VDC powered from DMS*MCCA1-6C.
Distractor:	D is incorrect. ICS*MOV150, TURBINE TRIP THROTTLE VLV is 125VDC powered from DMS*MCCA1-3D

References provided: None

Question 38 Cross References (table item links)

10CFR55
- 41(b)(7)

Cognitive Level
- 1

NUREG 1123 KA Catalog Rev. 2
- 217000 K2.01 2.8*/2.8*, Knowledge of electrical power supplies to the following: Motor operated valves

Level of Difficulty
- Level 2: System operation and response

LP
- O2-OPS-001-217-2-00 Rev. na

Question Source
- New

PROC
- N2-ELU-01 Rev. NA

Question Setting
- C1 (License class closed reference)

39 **SYSID: 22870** **Points: 1.00**

A plant startup is in progress per N2-OP-101A, Plant Startup, with the following:

- RPV pressure is 90 psig
- RCIC realignment to standby for power operations is in progress per N2-OP-35
- All RCIC system isolation signals are reset
- ICS*MOV121, TURB STM SUPPLY OUTBOARD ISOL VLV is open
- THEN....... ICS*MOV170, TURBINE STM SUPPLY INBOARD WARM-UP VLV is **rapidly throttled** to full open

Which one of the following describes the likely effect of these actions on the RCIC system, per N2-OP-35, Reactor Core Isolation Cooling System?

A. Steam line pressure equalizes with reactor pressure to complete system warmup.

B. Steam Admission valve closes due to reactor high water level transient condition.

C. Steam line isolation valves automatically close on high steam flow.

D. Steam Supply Rupture Disc may rupture due to high piping pressure.

Answer: C

Associated objective(s):

LC2 03-01 NRC EXAM DEVELOPMENT AREA

Question 39 Details

Question Type:	Multiple Choice
Topic:	NRC RO 39
System ID:	22870
User ID:	
Status:	Active
Must Appear:	No
Difficulty:	0.00
Time to Complete:	0
Point Value:	1.00
Cross Reference:	LC2 03-01
User Text:	
User Number 1:	0.00
User Number 2:	0.00
Comment:	O2-OPS-001-217-2-00- EO-1.4

Answer: C is correct. Automatic isolation of the RCIC system is likely to occur. Rapid opening of the steam warmup valve MOV170 results in a high steam flow condition, as stated in N2-OP-35 step E.1.10 CAUTION prior to opening MOV170

* * * * * * * * * * * * * *

CAUTION

Opening 2ICS*MOV170 too far OR too fast could cause a group 10 Isolation on RCIC Flow Hi (E31-N683A,B) or RHR/RCIC Flow Hi (E31-N684A,B).

* *

Distractor: A is incorrect. **Slowly throttling open** the warmup valve results in proper system warmup and equalization of piping pressure with RPV pressure.

Distractor: B is incorrect. Rapid opening of the warmup line will not result in an RPV high water level transient due to rapid depressurization of the RPV.

Distractor: D is incorrect. Rapid opening of the manual isolation valve ICS-V14 trap isolation can result in rupture disc damage. Based on stem conditions, the ICS-14 is still closed. The rupture disc is downstream V14, therefore opening warmup valve MOV170 cannot damage the rupture disc.

References provided: None

Question 39 Cross References (table item links)

<u>10CFR55</u>

- 41(b)(10)

<u>Cognitive Level</u>

- 1

<u>NUREG 1123 KA Catalog Rev. 2</u>

- G2.1.23 3.9/4 Ability to perform specific system and integrated plant procedures during different modes of plant operation
- 217000 RCIC, Rev. NA

<u>Level of Difficulty</u>

- Level 3: Higher order Knowledge item

<u>LP</u>

- O2-OPS-001-217-2-00 Rev. na

<u>Question Source</u>

- New

<u>PROC</u>

- N2-OP-101A Rev. NA
- N2-OP-35 Rev. NA

<u>Question Setting</u>

- C1 (License class closed reference)

40 **SYSID: 22871** **Points: 1.00**

A plant transient has occurred requiring entry into the EOPs, with the following:

- RHS Pump B and C are the **only** ECCS pumps running
- RPV Blowdown is required

Just prior to the blowdown, the following events/actions occur:

- A loss of Division II 125 VDC
- **Then,** all four ADS Logic Manual Initiation pushbuttons are armed and depressed.

Which one of the following describes the response of the ADS valves?

A. Open only after the ADS timer has timed out.

B. Open immediately without further operator action.

C. Closed but will open when Div I ADS back panel control switches are operated.

D. Closed but will open when Div II ADS back panel control switches are operated.

Answer: C

Associated objective(s):

LC2 03-01 NRC EXAM DEVELOPMENT AREA

Question 40 Details

Question Type:	Multiple Choice
Topic:	NRC RO 40
System ID:	22871
User ID:	
Status:	Active
Must Appear:	No
Difficulty:	0.00
Time to Complete:	0
Point Value:	1.00
Cross Reference:	LC2 03-01
User Text:	
User Number 1:	0.00
User Number 2:	0.00
Comment:	This question was derived from exam bank SYSID 17731

O2-OPS-001-218-2-01 - EO-1.4, 1.5

Answer:	C. is correct - ADS valves remain closed because ADS logic Div 1 does not have ECCS pump run permissive and ADS logic Div II does not have power. The "A" ADS solenoids still have power from Div I DC allowing a manual initiation.
Distractor:	A. is incorrect - this would be correct for auto initiation with Div 1 ECCS Pumps running.
Distractor:	B. is incorrect - this would be correct for manual initiation if Div 1 ECCS Pumps were running.
Distractor:	D. is incorrect - "B" ADS solenoids (switches on P631) are powered from Div II DC (2BYS*PNL201B).

References Provided: None

Question 40 Cross References (table item links)

10CFR55
- 41(b)(7)

Cognitive Level
- 2

NUREG 1123 KA Catalog Rev. 2
- 218000 A4.02 4.2*/4.2*; Ability to manually operate and/or monitor in the control room: ADS logic initiation

Level of Difficulty
- Level 3: Higher order Knowledge item

LP
- O2-OPS-001-218-2-01 Rev. na

Question Source
- Bank

PROC
- N2-EOP-C2 Rev. NA
- N2-OP-34 Rev. NA

Question Setting
- C1 (License class closed reference)

41 **SYSID: 22872** **Points: 1.00**

The plant is experiencing a STATION BLACKOUT, with the following:

- RCIC is injecting into RPV
- N2-SOP-2, Station Blackout Support Procedure is being implemented as directed from N2-SOP-1, Station Blackout

Which one of the following actions is authorized and required to maintain RCIC injection availability per N2-SOP-1, Station Blackout and SOP-2, Station Blackout Support Procedure?

A. Defeat RCIC High Area Temperature isolation by pulling relays.

B. Defeat RCIC Level 8 interlocks by pulling analog trip unit cards.

C. Place RCIC DIV I and II ISOL SEAL-IN RESET keylock switches in RESET.

D. Place all RCIC room high temperature isolation keylock test switches to BYPASS.

Answer: D

Associated objective(s):

LC2 03-01 NRC EXAM DEVELOPMENT AREA

Question 41 Details

Question Type:	Multiple Choice
Topic:	NRC RO 41
System ID:	22872
User ID:	
Status:	Active
Must Appear:	No
Difficulty:	0.00
Time to Complete:	0
Point Value:	1.00
Cross Reference:	LC2 03-01
User Text:	
User Number 1:	0.00
User Number 2:	0.00
Comment:	N2-SOP-2, Attachment 4 O2-OPS-001-217-2-00 EO-1.7

Answer:	D is correct. N2-SOP-1 and SOP-2 Attachment 4 direct bypassing RCIC Room High Temperature isolation signals using keylock switches at control room panels P632 and P642.
Distractor:	A is incorrect. Defeating RCIC High Area Temperature isolation is authorized by EOP-6 Attachment 2 and NOT by SOP-2. If this action is taken, it will not prevent the high room temperature isolation, which is expected during SBO conditions.
Distractor:	B is incorrect. Defeating RCIC Level 8 interlocks by pulling analog trip unit cards is authorized by EOP-6 Attachment 20 and NOT by SOP-2. During SBO low RPV water level conditions will occur, not high level.
Distractor:	C is incorrect because placing the Seal-In reset switches to reset is not authorized by any procedure to maintain system availability

References Provided: None

Question 41 Cross References (table item links)

10CFR55

- 41(b)(7)

Cognitive Level

- 1

NUREG 1123 KA Catalog Rev. 2

- 223002 K4.08 3.3/3.7, Knowledge of PRIMARY CONTAINMENT ISOLATION SYSTEM/NUCLEAR STEAM SUPPLY SHUT-OFF design feature(s) and/or interlocks which provide for the following: Manual defeating of selected isolations during specified emergency conditions

Level of Difficulty

- Level 3: Higher order Knowledge item

LP

- O2-OPS-001-217-2-00 Rev. na

Question Source

- New

PROC

- N2-SOP-02 Rev. NA

Question Setting

- C1 (License class closed reference)

42 **SYSID: 22873** **Points: 1.00**

The plant is operating at 100% power, with the following:

- Instrument root valve for RPV pressure transmitter 2ISC*PT5A is found to be closed (out of normal position)
- Prior to opening the instrument root valve a Group 1 isolation signal occurs
- RPV pressure rises to 1150 psig

Which one of the following identifies the maximum number of SRVs that lift in the relief mode?

A. 0

B. 7

C. 9

D. 18

Answer: A

Associated objective(s):

LC2 03-01 NRC EXAM DEVELOPMENT AREA

Question 42 Details

Question Type:	Multiple Choice
Topic:	NRC RO 42
System ID:	22873
User ID:	
Status:	Active
Must Appear:	No
Difficulty:	0.00
Time to Complete:	0
Point Value:	1.00
Cross Reference:	LC2 03-01
User Text:	
User Number 1:	0.00
User Number 2:	0.00
Comment:	Drawings: P&ID 28A GE 807E155TY, Sheets 1, 2, 8, 11, 12 (ADS Logic) O2-OPS-001-218-2-01 EO-1.5

Answer:	A is correct. With PT5A isolated it will not sense the rising RPV pressure. Both PT5A and PT5D are required to sense high pressure for SRVs to open in the relief mode. None of the SRVs can open in relief mode, even with one PT still functioning. "C" solenoid must energize to actuate the SRV.
Distractor:	B is incorrect since none of the SRVs will open. This is the number (7) of ADS valves and these will still open in the ADS mode.
Distractor:	C is incorrect since none of the SRVs will open. If electrical drawings are incorrectly interpreted and the conclusion is drawn that only half of the total number of SRVs are prevented from opening, then 18 (total) minus 9 (that are prevented from opening) means that 9 would open.
Distractor:	D is incorrect since none of the SRVs will open. If electrical drawings are incorrectly interpreted and the conclusion is drawn that SRVs will operate with one remaining functioning transmitter (PT5D), then 18 would be correct. RPV pressure given at 1150 psig is above the opening setpoint for all 18 SRVs

References Provided: DWGs P&ID 28A, GE 807E155TY Sh 1, 2, 8, 11, 12 ADS Logic

Question 42 Cross References (table item links)

10CFR55

- 41(b)(3)

Cognitive Level

- 2

DRW

- 807E155TY Rev. NA
- P&ID 28A Rev. na

NUREG 1123 KA Catalog Rev. 2

- 239002 K1.03 3.5/3.6, Knowledge of the physical connections and/or cause effect relationships between RELIEF/SAFETY VALVES and the following: Nuclear boiler instrument system

Level of Difficulty

- Level 3: Higher order Knowledge item

LP

- O2-OPS-001-218-2-01 Rev. na

Question Source

- New

PROC

- N2-OP-34 Rev. NA

Question Setting

- C1 (License class closed reference)

43 **SYSID: 22874** **Points: 1.00**

The plant is shutdown after a scram from full power resulting from a spurious turbine trip, with the following:

- Setpoint Setdown function of FWLC is being reset per N2-OP-3, Condensate and Feedwater System
- FWS-LV10s and LV55s controllers are in MANUAL per the reset procedure
- RPV water level is now 180 inches and steady being maintained by FWS-LV55A alone at 30% open
- Feedwater Low Flow Master Level Controller (HIC137) tape setpoint is 185 inches
- THEN the SET POINT SET DOWN RESET pushbutton is depressed AND the amber light is extinguished

Which one of the following describes the actions required to return Feedwater Level Control system to automatic operation per N2-OP-3, Condensate and Feedwater System?

A. Operate LV55A CLOSE pushbutton to null the controller before placing LV55A in AUTO.

B. Place LV55A controller in AUTO and allow automatic operation to restore water level to normal.

C. Raise HIC137 controller setpoint to null the controller before placing LV55A in AUTO.

D. Lower HIC137 controller setpoint to null the controller before placing LV55A in AUTO.

Answer: D

Associated objective(s):

LC2 03-01 NRC EXAM DEVELOPMENT AREA

Question 43 Details

Question Type:	Multiple Choice
Topic:	NRC RO 43
System ID:	22874
User ID:	
Status:	Active
Must Appear:	No
Difficulty:	0.00
Time to Complete:	0
Point Value:	1.00
Cross Reference:	LC2 03-01
User Text:	
User Number 1:	0.00
User Number 2:	0.00
Comment:	O2OPS-001-259-2-01, EO-1.4 N2-OP-3, H.1.0

Answer:	D is correct. Setpoint is now at 185 inches with actual level lower at 180 inches. With the Setpoint Setdown function reset, HIC137 setpoint is returned to 185 inches. Before the reset HIC137 setpoint is 185-18 inches or 167 inches. To null the controller the tape setting is reduced to match actual level.
Distractor:	A is incorrect. To null the signal before shifting control to AUTO, LV55A would have to be OPENED to raise level, to null the controller.
Distractor:	B is incorrect. This will result in a larger error signal and LV55A would open quickly to raise level. This is contrary to the procedure.
Distractor:	C is incorrect. Raising the setpoint tape setting will create a larger error signal and does not result in nulling the controller prior to placing the LV55A in automatic.

References Provided: None

Question 43 Cross References (table item links)

10CFR55
- 41(b)(5)

Cognitive Level
- 2

NUREG 1123 KA Catalog Rev. 2
- 259002 A1.04 3.6/3.6 , Ability to predict and/or monitor changes in parameters associated with operating the REACTOR WATER LEVEL CONTROL SYSTEM controls including the following: Reactor water level control controller indications

Level of Difficulty
- Level 3: Higher order Knowledge item

LP
- O2-OPS-001-259-2-01 Rev. na

Question Source
- New

PROC
- N2-OP-3 Rev. NA

Question Setting
- C1 (License class closed reference)

44 **SYSID: 22875** **Points: 1.00**

The plant is operating at 65% power, with the following:

- Feedwater Pumps A and B are maintaining RPV water level
- THEN........2NJS-US1 Bus B trips off due to a bus fault

Which one of the following describes the effect on the reactor water level control system?

A. LV10A and LV10B compensate for any changes in water level and will maintain normal water level.

B. LV10B is locked up in an open position and if it drifts in the closed direction LV10A will maintain normal water level.

C. LV10A is locked up in an open position and if it drifts in the closed direction LV10B cannot maintain normal water level. A low water level scram will occur.

D. LV10A and LV10B are locked up in an open position and if drifting in the closed direction, a low water level scram will occur.

Answer: B

Associated objective(s):

LC2 03-01 NRC EXAM DEVELOPMENT AREA

EXAMINATION ANSWER KEY

U2 NRC REACTOR OPERATOR WRITTEN EXAMINATION 2005

Question 44 Details

Question Type:	Multiple Choice
Topic:	NRC RO 44
System ID:	22875
User ID:	
Status:	Active
Must Appear:	No
Difficulty:	0.00
Time to Complete:	0
Point Value:	1.00
Cross Reference:	LC2 03-01
User Text:	
User Number 1:	0.00
User Number 2:	0.00
Comment:	O2-OPS-001-259-2-02 EO-1.5 N2-ARP-01 603142 and 603143

Answer:	B is correct. NJS-US1 Bus B loss results in lockup of LV10B. Any changes in level due to MOV valve drift will be compensated by the FWLC system opening the remaining LV10A, which has power.
Distractor:	A is incorrect. LV10B cannot respond to any changes in level because it is locked up on power loss.
Distractor:	C and D are incorrect because LV10A does not lock up, since it is powered from NJS-US1 Bus A (MCC003 bus A)

References Provided: None

Question 44 Cross References (table item links)

10CFR55

- 41(b)(7)

Cognitive Level

- 2

NUREG 1123 KA Catalog Rev. 2

- 259002 K6.02 3.3/3.4, Knowledge of the effect that a loss or malfunction of the following will have on the REACTOR WATER LEVEL CONTROL SYSTEM: A.C. power

Level of Difficulty

- Level 2: System operation and response

LP

- O2-OPS-001-259-2-02 Rev. na

Question Source

- New

PROC

- N2-ARP-01 Rev. NA

Question Setting

- C1 (License class closed reference)

45 **SYSID: 22876** **Points: 1.00**

The plant is operating at 100% power, with the following:

1200	Reactor Building differential pressure is -0.6 inches WG
1300	Drywell pressure rises to 14 psig and remains at that value
1300	GTS Trains A AND B automatically start
1310	GTS Train A is manually shutdown by placing TRAIN A INITIATION control switch in AUTO AFTER STOP per N2-OP-61B, Standby Gas Treatment System
1315	GTS Train B Fan automatically trips due to a blown control power fuse

Which one of the following describes the impact on Reactor Building differential pressure (DP) and actions required to restore RB differential pressure to its 1200 value?

A. DP goes below -0.25 inches WG (toward positive). Manual restart of GTS Train A is required.

B. DP goes below -0.25 inches WG (toward positive). Confirm automatic restart of GTS Train A on building pressure.

C. DP remains more negative than -0.25 inches WG. Defeat high drywell pressure interlocks and restart HVR.

D. DP remains more negative than -0.25 inches WG. Confirm automatic restart of GTS Train A on low Train B flow.

Answer: B

Associated objective(s):

LC2 03-01 NRC EXAM DEVELOPMENT AREA

EXAMINATION ANSWER KEY

U2 NRC REACTOR OPERATOR WRITTEN EXAMINATION 2005

Question 45 Details

Question Type:	Multiple Choice
Topic:	NRC RO 45
System ID:	22876
User ID:	
Status:	Active
Must Appear:	No
Difficulty:	0.00
Time to Complete:	0
Point Value:	1.00
Cross Reference:	LC2 03-01
User Text:	
User Number 1:	0.00
User Number 2:	0.00
Comment:	N2-OP-61B, Section H.2.0 O2-OPS-001-261-2-01 EO-1.6

Answer:	B. GTS Train A restarts because the high Drywell pressure (>1.68 psig) initiation signal is still present and with no running GTS train RB differential pressure will degrade toward 0. When pressure reaches -0.25 inches WG, the manually shutdown train will automatically restart.
Distractor:	A is incorrect. Manual restart of Train A is NOT required to restore DP. The train will auto restart.
Distractor:	C is incorrect. With no running GTS train RB differential pressure will degrade toward 0 and not be maintained above -0.25 inches. The actions to defeat high drywell pressure interlocks and restart HVR are only authorized by EOP-SC. If dp never reached 0, then EOP-SC would not be entered.
Distractor:	D is incorrect. GTS Train A will not autostart on low train flow.

References Provided: None

Question 45 Cross References (table item links)

10CFR55

- 41(b)(5)

Cognitive Level

- 2

NUREG 1123 KA Catalog Rev. 2

- 261000 A2.05 3/3.1, Ability to (a) predict the impacts of the following on the STANDBY GAS TREATMENT SYSTEM; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Fan trips

Level of Difficulty

- Level 2: System operation and response

LP

- O2-OPS-001-261-2-01, Rev. NA

Question Source

- New

PROC

- N2-OP-61B Rev. NA

Question Setting

- C1 (License class closed reference)

46 **SYSID: 22877** **Points: 1.00**

The plant is operating at 100% power with the following:

- SWP pumps C, E, D, F in service
- SWP pumps A, B in standby
- A complete loss of offsite power has occurred
- No other failures occur
- 3 minutes after the power loss, ECCS pumps have been manually started
- A second Division I SWP pump is required to be started

Which one of the following identifies SWP pump to be started to establish 2 pumps operating in Division I per N2-SOP-03, Loss of AC power?

A. Must start E

B. Must start C

C. Must start A

D. Can start any non-running pump

Answer: A

Associated objective(s):

LC2 03-01 NRC EXAM DEVELOPMENT AREA

Question 46 Details

Question Type:	Multiple Choice
Topic:	NRC RO 46
System ID:	22877
User ID:	
Status:	Active
Must Appear:	No
Difficulty:	0.00
Time to Complete:	0
Point Value:	1.00
Cross Reference:	LC2 03-01
User Text:	
User Number 1:	0.00
User Number 2:	0.00
Comment:	Question derived from bank SYSID 20767

O2-OPS-001-276-2-00, EO-1.4

Answer:	A is correct. Must start E pump because it will not result in tripping of the already running C pump. Load sequencing logic will result in a trip of C or E pump.
Distractor:	B is incorrect. SWP-P1C will auto start as part of pump sequencing.
Distractor:	C is incorrect. Starting SWP-P1A would trip all running Div I Service Water Pumps
Distractor:	D is incorrect for reasons stated above.

References Provided: None

Question 46 Cross References (table item links)

10CFR55
- 41(b)(5)

Cognitive Level
- 1

DRW
- ESK 5SWP01 Rev. NA

NUREG 1123 KA Catalog Rev. 2
- 262001 A2.03 3.9/4.3*; Ability to (a) predict the impacts of the following on the A.C. ELECTRICAL DISTRIBUTION; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Loss of off-site power

Level of Difficulty
- Level 2: System operation and response

LP
- O2-OPS-001-276-2-00, Rev. NA

Question Source
- Bank

PROC
- N2-SOP-03 Rev. NA

Question Setting
- C1 (License class closed reference)

47 **SYSID: 22878** **Points: 1.00**

The plant is operating at 100% power, with the following:

- 2VBB-UPS1B transfer switch is selected to MANUAL RESTART position
- Load is changed causing a momentary overload of 2VBB-UPS1B
- 2VBB-UPS1B inverter is supplying the loads

Which one of the following describes the response of 2VBB-UPS1B?

A. Transfers to DC backup until overload condition clears, then transfers back.

B. Transfers to DC backup and remains there even if overload condition clears.

C. Transfers to maintenance supply until the overload condition clears then transfers back.

D. Transfers to maintenance supply and remains there even if overload conditions clears.

Answer: D

Associated objective(s):

LC2 03-01 NRC EXAM DEVELOPMENT AREA

Question 47 Details

Question Type:	Multiple Choice
Topic:	NRC RO 47
System ID:	22878
User ID:	
Status:	Active
Must Appear:	No
Difficulty:	0.00
Time to Complete:	0
Point Value:	1.00
Cross Reference:	LC2 03-01
User Text:	
User Number 1:	0.00
User Number 2:	0.00
Comment:	Question derived from bank SYSID 21814

O2-OPS-001-262-2-03 - EO-1.4

Answer:	D is correct. In MANUAL Restart, the load remains on maintenance until manually transferred back to the UPS
Distractor:	A and B are incorrect. UPS only transfers to DC backup on loss of normal AC input power to the UPS.
Distractor:	C is incorrect. Correct response if in AUTO Restart.

References Provided: None

Question 47 Cross References (table item links)

10CFR55
- 41(b)(7)

Cognitive Level
- 1

NUREG 1123 KA Catalog Rev. 2
- 262002 A3.01 2.8/3.1; Ability to monitor automatic operations of the UNINTERRUPTABLE POWER SUPPLY (A.C./D.C.) including: Transfer from preferred to alternate source

Level of Difficulty
- Level 3: Higher order Knowledge item

LP
- O2-OPS-001-262-2-03 Rev. na

Question Source
- Bank

PROC
- N2-OP-71D Rev. NA

Question Setting
- C1 (License class closed reference)

48 **SYSID: 22879** **Points: 1.00**

The plant is operating at 85% power, with the following:

- Output Voltage meter for the in service battery charger 2BYS*CHGR2A1 rises to 142 VDC
- Annunciator 852108 DIV I BUS BYS 002A 125 VDC TROUBLE alarms

Which one of the following describes the effect on the in service charger and Division I Safety Related DC Switchgear, 2BYS*SWG002A?

A. Charger does NOT trip. Switchgear remains energized from CHGR2A1.

B. Charger trips. Switchgear remains energized from CHGR2A2.

C. Charger trips. Switchgear remains energized from battery.

D. Charger and battery breaker trips. Switchgear is de-energized.

Answer: C

Associated objective(s):

LC2 03-01 NRC EXAM DEVELOPMENT AREA

Question 48 Details

Question Type:	Multiple Choice
Topic:	NRC RO 48
System ID:	22879
User ID:	
Status:	Active
Must Appear:	No
Difficulty:	0.00
Time to Complete:	0
Point Value:	1.00
Cross Reference:	LC2 03-01
User Text:	
User Number 1:	0.00
User Number 2:	0.00
Comment:	N2-ARP-01, 852108 N2-OP-74A O2-OPS-001-263-2-01 EO-1.4

Answer:	C is correct. Overvoltage condition results in a trip of the AC input breaker for the charger. The battery breaker remains closed and switchgear remains energized from the 125 VDC safety related battery.
Distractor:	A is incorrect. Charger trips if output voltage exceeds 142 VDC.
Distractor:	B is incorrect. CHGR2A2 is a redundant charger and is required to be placed in service manually per N2-OP-74A off normal section H.13.0
Distractor:	D is incorrect. Battery breaker will not trip on over voltage.

References Provided: None

Question 48 Cross References (table item links)

10CFR55
- 41(b)(10)

Cognitive Level
- 1

NUREG 1123 KA Catalog Rev. 2
- 263000 A3.013.2/3.3, Ability to monitor automatic operation of the DC ELECTRICAL DISTRIBUTION including: Meters, Dials, Recorders, Alarms & Indicating Lights, Rev. NA

Level of Difficulty
- Level 3: Higher order Knowledge item

LP
- O2-OPS-001-263-2-01 Rev. na

Question Source
- Bank

PROC
- N2-ARP-01 Rev. NA
- N2-OP-74A Rev. NA

Question Setting
- C1 (License class closed reference)

49 **SYSID: 22880** **Points: 1.00**

The plant is experiencing a transient, with the following:

1100	Drywell Pressure rises to 2.0 psig
1105	ENS*SWG101 4 KV Emergency Bus experiences a "degraded voltage" condition which lasts for about 15 seconds
1105	EGS*EG1 and the 4 KV Emergency Distribution system responds as designed
1108	EGS*EG1 Turbocharger oil pressure drops to 1.0 psig

Which one of the following identifies EGS*EG1 and its output breaker status at 1108, as a result of the change in Turbocharger oil pressure?

	EGS*EG1	Output Breaker
A.	Running	Open now and did not close during transient
B.	Running	Closed now after automatically closing at 1105
C.	Tripped	Closed now after automatically closing at 1105
D.	Tripped	Open now and did not close during transient

Answer: B

Associated objective(s):

LC2 03-01 NRC EXAM DEVELOPMENT AREA

Question 49 Details

Question Type:	Multiple Choice
Topic:	NRC RO 49
System ID:	22880
User ID:	
Status:	Active
Must Appear:	No
Difficulty:	0.00
Time to Complete:	0
Point Value:	1.00
Cross Reference:	LC2 03-01
User Text:	
User Number 1:	0.00
User Number 2:	0.00
Comment:	O2-OPS-001-264-2-01, EO-1.4

Answer:	B is correct. EGS*EG1 will autostart in the Emergency mode on LOCA at 1100. Degraded bus voltage with a LOCA for 8 seconds will trip open the normal offsite feeder breaker . Since voltage was degraded, its output breaker closes and remains closed. Since the Turbocharger low oil pressure trip is bypassed in the Emergency Mode, the engine continues to run with the output breaker closed.
Distractor:	A, is incorrect. Since voltage was degraded, its output breaker closes remains closed.
Distractor:	C and D are incorrect. Since the Turbocharger low oil pressure trip is bypassed in the Emergency Mode, the engine continues to run with the output breaker closed. EDG output breaker can remain closed. With EDG tripped if a loss of DC power control power occurred.

References Provided: None

Question 49 Cross References (table item links)

10CFR55
- 41(b)(7)

Cognitive Level
- 1

NUREG 1123 KA Catalog Rev. 2
- 264000 K4.02 4/4.2, Knowledge of EMERGENCY GENERATORS (DIESEL/JET) design feature(s) and/or interlocks which provide for the following: Emergency generator trips (emergency/LOCA)

Level of Difficulty
- Level 2: System operation and response

LP
- O2-OPS-001-264-2-01 Rev. NA

Question Source
- New

PROC
- N2-OP-100A Rev. NA

Question Setting
- C1 (License class closed reference)

50 **SYSID: 22881** **Points: 1.00**

Division I EGS*EG1 is in standby condition, when the following local alarms are received:

- Annunciator 406-6-3 JACKET WATER AND LUBE OIL PUMPS TROUBLE alarms
- Annunciator 406-3-6 LUBE OIL LOW PRESSURE CIRCULATING PUMP alarms
- Annunciator 406-3-7 JACKET WATER TEMPERATURE OFF NORMAL is extinguished

Which one of the following describes the effect on engine temperatures and start reliability?

A. Jacket Water temperature lowers. First try start reliability is degraded.

B. Jacket Water heater maintains all engine temperatures within normal bands. Start reliability is NOT affected.

C. Lube Oil temperatures are maintained within the normal band. Start reliability is NOT affected.

D. Lube Oil temperature lowers. First try start reliability is degraded.

Answer: D

Associated objective(s):

LC2 03-01 NRC EXAM DEVELOPMENT AREA

Question 50 Details

Question Type:	Multiple Choice
Topic:	NRC RO 50
System ID:	22881
User ID:	
Status:	Active
Must Appear:	No
Difficulty:	0.00
Time to Complete:	0
Point Value:	1.00
Cross Reference:	LC2 03-01
User Text:	
User Number 1:	0.00
User Number 2:	0.00
Comment:	N2-OP-100A N2-ARP-02 406-6-3 AND 406-3-6 O2-OPS-001-264-2-01, EO-1.7

Answer: D is correct. Per N2-ARP-02. Alarm 406-6-3 is actuated by either the Jacket Water Pump OR the Lube Oil Circulating Pump trip. Alarm 406-3-6 indicates the Lube Oil Circulating pump is affected. The lube oil heater will trip off if the circulating pump is not running. This results in a lowering lube oil temperature. Engine is normally kept warm between 120°F and 130°F by Jacket Water and Lube Oil systems to enhance the first start reliability of the engine.

Distractor: A and B are incorrect. Jacket Water is not affected based on actuation of 406-3-6 LUBE OIL LOW PRESSURE CIRCULATING PUMP

Distractor: C is incorrect. The lube oil heater will trip off if the circulating pump is not running. This results in a lowering lube oil temperature.

References Provided: None

Question 50 Cross References (table item links)

10CFR55

- 41(b)(5)

Cognitive Level

- 2

NUREG 1123 KA Catalog Rev. 2

- 264000 A1.01 3.0*/3.0*, Ability to predict and/or monitor changes in parameters associated with operating the EMERGENCY GENERATORS (DIESEL/JET) controls including: Lube oil temperature

Level of Difficulty

- Level 3: Higher order Knowledge item

LP

- O2-OPS-001-264-2-01 Rev. NA

Question Source

- New

PROC

- N2-ARP-02 Rev. NA

Question Setting

- C1 (License class closed reference)

51 **SYSID: 22882** **Points: 1.00**

The plant is operating at 100% power with the following:

- Annunciator 851209, DIV I PRI CNMT INSTR AIR VLVS INOPERABLE, is in alarm
- Both red and green valve position indication lights for IAS*SOV166 are OFF
- Troubleshooting determines that control power fuse in the power supply for IAS*SOV166 is blown

Which of the following identifies the valve position 10 minutes later and operability condition of the Main Steam Isolation Valves (MSIV's)?

A. All valves are open with the inboard valves inoperable

B. All valves are open with the outboard valves inoperable

C. The inboard valves close with all valves remaining operable

D. The outboard valves close with all valves remaining operable

Answer: A

Associated objective(s):

LC2 03-01 NRC EXAM DEVELOPMENT AREA

Question 51 Details

Question Type:	Multiple Choice
Topic:	NRC RO 51
System ID:	22882
User ID:	
Status:	Active
Must Appear:	No
Difficulty:	0.00
Time to Complete:	0
Point Value:	1.00
Cross Reference:	LC2 03-01
User Text:	
User Number 1:	0.00
User Number 2:	0.00
Comment:	O2-OPS-001-239-2-00 EO-1.7

N2-SOP-3 Section 5, Discussion
N2-ARP-01, 851209

Answer: A is correct. Because loss of power causes the SOV to close, causing loss of pneumatics to the inboard MSIV's. The loss of pneumatics causes the inboard MSIV's to be inoperable.

Distractor: C and D are incorrect. Because the loss of pneumatics to the inboard valves does not cause MSIV closure. Accumulators maintain pressure for a period of time after isolation. Keeping the MSIV's open.

Distractor: B is incorrect because IAS*SOV166 is inline with the inboard MSIV's only.

References Provided: None

Question 51 Cross References (table item links)

10CFR55
- 41(b)(7)

Cognitive Level
- 2

NUREG 1123 KA Catalog Rev. 2
- 300000 K3.02 3.3/3.4, Knowledge of the effect that a loss of INSTRUMENT AIR SYSTEM will have on the following: Systems having pneumatic valves and controls

Level of Difficulty
- Level 2: System operation and response

Question Source
- New

PROC
- N2-ARP-01 Rev. NA
- N2-SOP-3 Rev. NA

TECHSPEC
- 3.6.1.3 Rev. NA

Question Setting
- C1 (License class closed reference)

52 **SYSID: 22883** **Points: 1.00**

The plant is operating at 100% power with the following:

- 2CCS-P1A and 2CCS-P1B are in service with 2CCS-P1C in standby
- 2CCS-P1A pump shaft shears
- System discharge pressure lowers to 85 psig

Which one of the following describes the pump motor breaker position following this casualty, assuming no operator action?

	2CCS-P1A	2CCS-P1B	2CCS-P1C
A.	Closed	Closed	Open
B.	Open	Open	Open
C.	Closed	Closed	Closed
D.	Open	Open	Closed

Answer: C

Associated objective(s):

LC2 03-01 NRC EXAM DEVELOPMENT AREA

Question 52 Details

Question Type:	Multiple Choice
Topic:	NRC RO 52
System ID:	22883
User ID:	
Status:	Active
Must Appear:	No
Difficulty:	0.00
Time to Complete:	0
Point Value:	1.00
Cross Reference:	LC2 03-01
User Text:	
User Number 1:	0.00
User Number 2:	0.00
Comment:	Question derived from bank SYSID 20976

O2-OPS-001-274-2-00, EO-1.4
N2-ARP-01, 601244
N2-OP-14
N2-SOP-14

Answer: C is the correct answer because of the following

1. 'A' pump motor is still running due to no automatic trip signals
2. 'B' pump motor is still running due to no automatic trip signals
3. 'C' pump motor is running due to an auto start signal at 95 psig system discharge pressure (pump discharge)

References Provided: None

Question 52 Cross References (table item links)

10CFR55

- 41(b)(7)

Cognitive Level

- 1

NUREG 1123 KA Catalog Rev. 2

- 400000 K6.05 3/3.1; Knowledge of the effect that a loss or malfunction of the following will have on the CCWS: Pumps

Level of Difficulty

- Level 2: System operation and response

LP

- O2-OPS-001-274-2-00 Rev. NA

Question Source

- Bank

PROC

- N2-ARP-01 Rev. NA
- N2-OP-14 Rev. NA
- N2-SOP-14 Rev. NA

Question Setting

- C1 (License class closed reference)

53 **SYSID: 22884** **Points: 1.00**

The plant is operating at 100% power, with the following:

- A tube rupture occurs in the Reactor Water Cleanup (WCS) System Non-Regenerative Heat Exchanger tube bundle
- The resultant leak rate is 130 gpm

Which one of the following identifies the CCP Surge Tank level and CCP heat exchanger temperature control valve (TCV) responses due to the tube rupture.

	CCP Surge Tank	CCP Heat TCV moves toward...
A.	Rises	**maximum** cooling
B.	Rises	**minimum** cooling
C.	Lowers	**maximum** cooling
D.	Lowers	**minimum** cooling

Answer: A

Associated objective(s):

LC2 03-01 NRC EXAM DEVELOPMENT AREA

Question 53 Details

Question Type:	Multiple Choice
Topic:	NRC RO 53
System ID:	22884
User ID:	
Status:	Active
Must Appear:	No
Difficulty:	0.00
Time to Complete:	0
Point Value:	1.00
Cross Reference:	LC2 03-01
User Text:	
User Number 1:	0.00
User Number 2:	0.00
Comment:	Question derived from bank SYSID 17242

O2-OPS-001-208-2-00 EO-1.8

Answer:	A is correct. Hot WCS flow will enter the CCP system because WCS system pressure is higher than CCP system pressure. As a result, CCP Surge Tank level will rise until it reaches the atmospheric vent, at which time it will overflow into the Reactor Building. Since hot water will be added to the CCP system the CCP system temperature rises and the TCV will position to lower temperature by closing the HX Bypass to 0% and open the heat exchanger outlet to 100% for maximum cooling
Distractor:	D is incorrect because the CCP Surge Tank level rises.
Distractor:	B is incorrect because the 100% bypass flow (minimum cooling) would indicate that CCP temperature has lowered.
Distractor:	C is incorrect because the CCP Surge Tank level rises.

References Provided: None

Question 53 Cross References (table item links)

10CFR55
- 41(b)(5)

Cognitive Level
- 2

NUREG 1123 KA Catalog Rev. 2
- 400000 A1.04 2.8/2.8; Ability to predict and/or monitor changes in parameters associated with operating the CCWS controls including: Surge Tank Level

Level of Difficulty
- Level 2: System operation and response

LP
- O2-OPS-001-208-2-00, Rev. NA

Question Source
- Bank

PROC
- N2-OP-13 Rev. NA

Question Setting
- C1 (License class closed reference)

54 **SYSID: 22885** **Points: 1.00**

The plant is operating at 100% power, with the following:

- Instrument Air supply line to the in-service Control Rod Drive (RDS) system flow control valve (2RDS*FV6B) actuator breaks.

Which one of the following identifies the effect and required actions?

A. CRDM temperatures rise; manually reposition FV6B.

B. CRDM temperatures rise; place standby FV6A in service.

C. Charging Water pressure lowers; manually reposition FV6B.

D. Charging Water pressure lowers; place standby FV6A in service.

Answer: B

Associated objective(s):

LC2 03-01 NRC EXAM DEVELOPMENT AREA

Question 54 Details

Question Type:	Multiple Choice
Topic:	NRC RO 54
System ID:	22885
User ID:	
Status:	Active
Must Appear:	No
Difficulty:	0.00
Time to Complete:	0
Point Value:	1.00
Cross Reference:	LC2 03-01
User Text:	
User Number 1:	0.00
User Number 2:	0.00
Comment:	Question derived from bank SYSID 17767

O2-OPS-001-201-2-01 - EO-1.5

Answer:	**B** is correct because the RDS flow control valve fails closed on loss of air. This results in CRDM temperature rising. The standby valve is placed in service.
Distractor:	**A** is incorrect because FV6B fails closed. CRDM temperatures will rise due to closure of the in-service RDS flow control valve.
Distractor:	**C** and **D** are incorrect. Charging header taps off upstream the FV and valve closure will not result in low Charging header pressure.

References Provided: None

Question 54 Cross References (table item links)

10CFR55

- 41(b)(10)

Cognitive Level

- 2

NUREG 1123 KA Catalog Rev. 2

- 201001 A2.07 3.2/3.1, Ability to (a) predict the impacts of the following on the CONTROL ROD DRIVE HYDRAULIC SYSTEM; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Flow control valve failure

Level of Difficulty

- Level 2: System operation and response

LP

- O2-OPS-001-201-2-01 Rev. na

Question Source

- Modified

PROC

- N2-OP-30 Rev. NA

Question Setting

- C1 (License class closed reference)

55 **SYSID: 22886** **Points: 1.00**

The plant is operating at 100% power, with the following:

- No control rod movements are in progress
- Then... the Withdraw Supply Directional Control Valve solenoid for rod 30-31 open circuits

Which one of the following describes the Reactor Manual Control System response?

A. ROD DRIVE CONTROL SYSTEM INOPERABLE alarms and normal motion is prevented for all control rods.

B. ACTIVITY CONTROLS DISAGREE lights and normal motion is prevented only for rod 30-31.

C. ACTIVITY CONTROLS DISAGREE lights and normal motion is prevented for all control rods.

D. ROD DRIVE CONTROL SYSTEM INOPERABLE alarms and normal motion is prevented only for rod 30-31.

Answer: A

Associated objective(s):

LC2 03-01 NRC EXAM DEVELOPMENT AREA

Question 55 Details

Question Type:	Multiple Choice
Topic:	NRC RO 55
System ID:	22886
User ID:	
Status:	Active
Must Appear:	No
Difficulty:	0.00
Time to Complete:	0
Point Value:	1.00
Cross Reference:	LC2 03-01
User Text:	
User Number 1:	0.00
User Number 2:	0.00
Comment:	Question derived from bank SYSID 20967

O2-OPS-001-201-2-02 - EO-1.4

Answer: A is correct. RDCS tests the continuity of the DCV solenoids during the rest portion of cycle. If a DCV does not properly respond when tested, the ACKNOWLEDGE word returning from the HCU transponder will not match the REFERENCE word stored in the Analyzer. This will generate an RDCS inop "system operation is interrupted" and cut power to ALL transponder cards. This prevents all normal rod motion.

Distractor: B and C are incorrect because Activity Controls Disagree condition results from an error between the COMMAND words when compared in the analyzer, which has not occurred, with the stated conditions. This only prevents motion for the affected rod.

Distractor: Dis incorrect because the Rod Drive Control System Inoperable alarm prevents motion for all rods.

References Provided: None

Question 55 Cross References (table item links)

10CFR55

- 41(b)(6)

Cognitive Level

- 2

NUREG 1123 KA Catalog Rev. 2

- 201002 K1.01 3.2/3.2; Knowledge of the physical connections and/or cause-effect relationships between REACTOR MANUAL CONTROL SYSTEM and the following: Control rod drive hydraulic system

Level of Difficulty

- Level 3: Higher order Knowledge item

LP

- O2-OPS-001-201-2-02 Rev. na

Question Source

- Bank

PROC

- N2-OP-96 Rev. NA

Question Setting

- C1 (License class closed reference)

56 **SYSID: 22887** **Points: 1.00**

The plant is operating at power, with the following:

- Reactor steam flow is 27%
- Reactor feed flow is 24%
- Reactor power indicated on the APRMs is 25%

Which one of the following describes the current operating status of the Rod Worth Minimizer?

A. Below the Low Power Set Point, alarms and rod blocks are enforced.

B. Above the Low Power Alarm Point, alarms and rod blocks are not enforced.

C. In the Transition Zone, existing errors are identified but rod blocks are not enforced.

D. In the Transition Zone, existing errors are not identified and rod blocks are not enforced.

Answer: C

Associated objective(s):

LC2 03-01 NRC EXAM DEVELOPMENT AREA

Question 56 Details

Question Type:	Multiple Choice
Topic:	NRC RO 56
System ID:	22887
User ID:	
Status:	Active
Must Appear:	No
Difficulty:	0.00
Time to Complete:	0
Point Value:	1.00
Cross Reference:	LC2 03-01
User Text:	
User Number 1:	0.00
User Number 2:	0.00
Comment:	Question derived from bank SYSID 12895

O2-OPS-001-201-2-02 EO-1.4, Section D

Answer:	C is correct. Steam flow above 25% and below 40% places RWM in Transition Zone
Distractor:	A is incorrect. This choice is based on feed flow being below 25% RWM does not use feed flow input for LPSP and LPAP
Distractor:	B is incorrect. Steam flow input places RWM in Transition Zone
Distractor:	D is incorrect. Rod errors will be identified if they exist while in Transition Zone.

References Provided: None

Question 56 Cross References (table item links)

10CFR55

- 41(b)(6)

Cognitive Level

- 1

NUREG 1123 KA Catalog Rev. 2

- 201006 K1.04 3.1/3.2; Knowledge of the physical connections and/or cause-effect relationships between ROD WORTH MINIMIZER SYSTEM (RWM) (PLANT SPECIFIC) and the following: Steam flow/reactor power: P-Spec(Not-BWR6)

Level of Difficulty

- Level 2: System operation and response

LP

- O2-OPS-001-201-2-02 Rev. na

Question Source

- Modified

PROC

- N2-OP-95A Rev. NA

Question Setting

- C1 (License class closed reference)

57 **SYSID: 22888** **Points: 1.00**

The plant is operating at 40% power during power ascension, with the following:

- Both Recirc (RCS) Pumps are operating in high speed
- Total Steam Flow is 5.5 Mlbm/hr
- Total Feed Flow is 5.5 Mlbm/hr
- FWLC is in automatic controlling level at 182 inches
- THEN.....Feedwater Flow transmitter B fails downscale

Which one of the following describes the status of the RCS pumps after one minute?

A. Low speed because Total Feedwater Flow signal is lower.

B. Low speed because the Main Turbine tripped on high level.

C. High speed with RPV level controlling between 170 to 175 inches.

D. High speed with RPV level controlling between 190 to 195 inches.

Answer: A

Associated objective(s):

LC2 03-01 NRC EXAM DEVELOPMENT AREA

Question 57 Details

Question Type:	Multiple Choice
Topic:	NRC RO 57
System ID:	22888
User ID:	
Status:	Active
Must Appear:	No
Difficulty:	0.00
Time to Complete:	0
Point Value:	1.00
Cross Reference:	LC2 03-01
User Text:	
User Number 1:	0.00
User Number 2:	0.00
Comment:	O2-OPS-001-202-2-01, EO-1.4

Answer:	A is correct. RCS pumps will automatically downshift to low speed because sensed Feedwater will be below the setpoint of 3.35 Mlbm/hr. At 40% power and steam flow, Feedwater Flow will be about 40% of rated flow (40% x 15 Mlbm/hr= 6 Mlbm/hr Total). This equates to 3 Mlbm/hr sensed in each FW header. RCS pumps downshift to low speed (interlock) if FW Flow is < 3.35 Mlbm/hr after 15 second time delay. With one FW flow transmitter failed downscale, FWLC will raise RPV level to about 190 inches to compensate for the flow mismatch. Sensed FW is now 50% of actual FW flow or about 3 Mlbm/hr. This is below the downshift setpoint. NOTE: Actual initial simulator conditions were 40% and 5.2 (2.6 through each FW header) Mlbm/hr total FW flow. With failed instrument, indicated FW flow was 1.7 Mlbm/hr on A header and 0 on B header. Power dropped to 27% when the RCS pumps downshifted. Actual steam flow and feed flow was 3.4 Mlbm/hr. RPV level swelled but did not reach 202 inches
Distractor	B is incorrect. RPV water level will not rise above the Level 8 trip setpoint of 202.3 inches. The Main Turbine will not trip. Even if the turbine did trip due to level swell, the RCS pumps were already downshifted on low feedwater flow.
Distractor:	C and D are incorrect because the RCS pumps will downshift. If the

instrument failure occurred at a higher power level, the RCS pumps would remain in high speed.

References Provided: None

Question 57 Cross References (table item links)

10CFR55
- 41(b)(7)

Cognitive Level
- 2

NUREG 1123 KA Catalog Rev. 2
- 202001 K6.07 3.3/3.3; Knowledge of the effect that a loss or malfunction of the following will have on the RECIRCULATION SYSTEM: Feedwater flow

Level of Difficulty
- Level 4: Highest order knowledge

LP
- O2-OPS-001-202-2-01 Rev. na

Question Source
- New

PROC
- N2-OP-29 Rev. NA

Question Setting
- C1 (License class closed reference)

58 **SYSID: 22889** **Points: 1.00**

The plant is operating at 100% power, with the following:

- Reactor Engineering is running TIP traces using the automatic mode.
- Four (4) TIPs are stowed in their shield chambers.
- One TIP is out of its shield chamber and running into the core but has NOT reached the CORE TOP LIMIT.
- The low speed switch on the running TIP control panel is in the OFF position.
- THEN.....a circuit failure results in an unplanned Group 3 Primary Containment Isolation Signal (PCIS)

Which one of the following describes the automatic response of the TIP system as a result of the isolation signal?

A. TIP changes direction and retracts at fast speed to the indexer, then shifts to slow speed. When stowed the ball valve closes.

B. TIP continues at slow speed to the CORE TOP LIMIT. Then it retracts at fast speed and when stowed the ball valve closes.

C. TIP stops moving. When a confirmatory signal is received, it retracts at fast speed until stowed and then the ball valve closes.

D. TIP shifts to fast speed and runs to the CORE TOP LIMIT. Then it retracts at fast speed and when stowed the ball valve closes.

Answer: A

Associated objective(s):

LC2 03-01 NRC EXAM DEVELOPMENT AREA

EXAMINATION ANSWER KEY

U2 NRC REACTOR OPERATOR WRITTEN EXAMINATION 2005

Question 58 Details

Question Type:	Multiple Choice
Topic:	NRC RO 58
System ID:	22889
User ID:	
Status:	Active
Must Appear:	No
Difficulty:	0.00
Time to Complete:	0
Point Value:	1.00
Cross Reference:	LC2 03-01
User Text:	
User Number 1:	0.00
User Number 2:	0.00
Comment:	Question derived from bank SYSID 8130

N2-OP-83, Attachment 1, N2-OP-94, Sect. D.9.0

O2-OPS-001-215-2-01 EO- 1.4

Answer: A. The TIP will reverse and retract in fast speed until it reaches the indexer, then shift to slow speed. When the TIP is in its shield chamber, the ball valve will close.

Distractor: C is incorrect. The TIP will not stop. It will reverse direction and retract when the PCIS signal is received. No confirmatory signal is needed for the reverse motion and retract at fast speed to be initiated.

Distractor: B and D are incorrect. The TIP will not continue motion into the core. When the PCIS signal is received, the TIP will reverse direction and retract at full speed until stowed.

References Provided: None

Question 58 Cross References (table item links)

10CFR55

- 41(b)(7)

Cognitive Level

- 1

NUREG 1123 KA Catalog Rev. 2

- 215001 K6.04 3.1/3.4, Knowledge of effect that a loss or malfunction of the following will have on the TRAVERSING IN-CORE PROBE: Primary Containment Isolation system: Mark-I&II(Not-BWR1)

Level of Difficulty

- Level 2: System operation and response

Question Source

- Bank

PROC

- N2-OP-83 Rev. NA
- N2-OP-94 Rev. NA

Question Setting

- C1 (License class closed reference)

59 **SYSID: 22890** **Points: 1.00**

A plant scram from full power occurs, with the following:

- MSIVs are closed
- RPV Pressure is being maintained 800 to 1000 psig with SRVs
- SWP pumps are in a 2/2 running configuration
- All SWP pumps are available
- SWP non essential headers are in service
- Suppression Pool water temperature is 92°F and rising
- Both loops of RHS are started in Suppression Pool Cooling
- SWP Flow through RHS heat exchanger A is 1000 gpm
- SWP Flow through RHS heat exchanger B is 1000 gpm

Which one of the following actions is required to be able to establish rated SWP flow through RHS heat exchanger B, per N2-OP-31?

A. Stop SWP flow through RHS heat exchanger A.

B. Start any available SWP pump in either division.

C. Isolate the Turbine Building non essential SWP header.

D. Isolate the Reactor Building non essential SWP header.

Answer: B

Associated objective(s):

LC2 03-01 NRC EXAM DEVELOPMENT AREA

Question 59 Details

Question Type:	Multiple Choice
Topic:	NRC RO 59
System ID:	22890
User ID:	
Status:	Active
Must Appear:	No
Difficulty:	0.00
Time to Complete:	0
Point Value:	1.00
Cross Reference:	LC2 03-01
User Text:	
User Number 1:	0.00
User Number 2:	0.00
Comment:	N2-OP-31, H.12.0

O2-OPS-001-205-2-00 - EO-1.7

Answer: B is correct. Per N2-OP-31 H.12.0, a fifth SWP pump is the method used to establish rated (7400 gpm) through an RHS heat exchanger.

Distractor: A is incorrect. Stopping 1000 gpm SWP flow through the RHS HX A will not provide the required pump capacity to allow RHS HX B flow to be raised from 1000 to 7400 gpm. Note 2 states that "**Five SWP pumps are required to be in operation to provide rated flow to one** or both RHS heat exchangers when non-essential headers are also being supplied by the Service Water system."

Distractor: C and D are incorrect. The Turbine Building non essential header is only isolated if more than four SWP pumps cannot be started. With all SWP pumps available, the fifth pump is started. If it cannot, then the TB non essential header is isolated. The RB header is not isolated because it is still desirable to supply safety related loads in the RB.

References Provided: None

EXAMINATION ANSWER KEY

U2 NRC REACTOR OPERATOR WRITTEN EXAMINATION 2005

Question 59 Cross References (table item links)

10CFR55

- 41(b)(5)

Cognitive Level

- 1

NUREG 1123 KA Catalog Rev. 2

- 219000 K5.04 2.9/2.9; Knowledge of the operational implications of the following concepts as they apply to RHR/LPCI: TORUS/SUPPRESSION POOL COOLING MODE: Heat exchanger operation

Level of Difficulty

- Level 3: Higher order Knowledge item

LP

- O2-OPS-001-205-2-00 Rev. NA

Question Source

- New

PROC

- N2-OP-31 Rev. NA

Question Setting

- C1 (License class closed reference)

60 **SYSID: 22891** **Points: 1.00**

The reactor core is being offloaded, with the following:

- Reactor Mode Switch is in REFUEL position
- All control rods are fully inserted into the reactor core
- Step performed that just unlatched fuel bundle in the fuel pool. The Main Hoist has NOT been raised
- Step to accomplish the removal of a fuel assembly from the reactor will be performed next

Which one of the following describes when Annunciator 603442, CONTROL ROD OUT BLOCK actuates during the execution of these steps?

A. The Main Hoist is raised to the Normal-Up position and is approaching the reactor vessel.

B. The Main Hoist has been lowered from the Normal-Up position over the reactor core location.

C. The fuel assembly has been grappled but Main Hoist raise motion has NOT been initiated.

D. The fuel assembly has been grappled and raised from its seated position in the reactor core.

Answer: D

Associated objective(s):

LC2 03-01 NRC EXAM DEVELOPMENT AREA

EXAMINATION ANSWER KEY

U2 NRC REACTOR OPERATOR WRITTEN EXAMINATION 2005

Question 60 Details

Question Type:	Multiple Choice
Topic:	NRC RO 60
System ID:	22891
User ID:	
Status:	Active
Must Appear:	No
Difficulty:	0.00
Time to Complete:	0
Point Value:	1.00
Cross Reference:	LC2 03-01
User Text:	
User Number 1:	0.00
User Number 2:	0.00
Comment:	N2-OP-39 N2-ARP-01, 603442 O2-OPS-001-234-2-01, EO-1.7

Answer:	D is correct based on Rod Block #2 (N2-OP-39, 5.4.2), which occurs when any hoist is loaded and the bridge is over the reactor vessel.
Distractor:	A. No Rod Block is received. Hoist is not loaded.
Distractor:	B. No Rod Block is received. When refueling bridge traveled over the core the hoist was not loaded.
Distractor:	C. No Rod Block is received. The refueling bridge is over the reactor core but the hoist is not yet loaded.

References Provided: None

Question 60 Cross References (table item links)

10CFR55
- 41(b)(7)

Cognitive Level
- 2

NUREG 1123 KA Catalog Rev. 2
- 234000 K4.02 3.3/4.1; Knowledge of FUEL HANDLING EQUIPMENT design feature(s) and/or interlocks which provide for the following: Prevention of control rod movement during core alterations

Level of Difficulty
- Level 2: System operation and response

LP
- O2-OPS-001-234-2-01 Rev. na

Question Source
- Bank

PROC
- N2-ARP-01 Rev. NA
- N2-OP-39 Rev. na

Question Setting
- C1 (License class closed reference)

61 **SYSID: 22892** **Points: 1.00**

Plant startup is in progress, with the following:

- Main Turbine SHELL WARMING is in progress
- Turbine Steam Chest Pressure is 103 psia

Which one of the following actions is required to be taken by the Reactor Operator to restore Steam Chest Pressure to within shell warming limits and the reason why per N2-OP-21, Main Turbine?

At MAIN STOP VALVE POSITION DEMAND FOR CHEST/SHELL WARMING controls, throttle 2MSS-MSV1D, MSV2, using the ......

A. INCREASE pushbutton to prevent lengthening required soak time.

B. INCREASE pushbutton to prevent an automatic reactor scram.

C. DECREASE pushbutton to prevent lengthening required soak time.

D. DECREASE pushbutton to prevent an automatic reactor scram.

Answer: D

Associated objective(s):

LC2 03-01 NRC EXAM DEVELOPMENT AREA

Question 61 Details

Question Type:	Multiple Choice
Topic:	NRC RO 61
System ID:	22892
User ID:	
Status:	Active
Must Appear:	No
Difficulty:	0.00
Time to Complete:	0
Point Value:	1.00
Cross Reference:	LC2 03-01
User Text:	
User Number 1:	0.00
User Number 2:	0.00
Comment:	O2-OPS-001-245-2-01 EO 1.7

N2-OP-21, E.3.0

Answer:	D is correct. Per N2-OP-21, E.3.0 Shell Warming. Per step E.3.19 pressure is to be maintained between 75 and 100 psia. 103 psia must be recognized as being above the high end limit and that the DECREASE pushbutton is used to throttle less steam flow through MSV #2 to restore pressure to the proper band.
Distractor:	A and B are incorrect. INCREASE will result in pressure approaching and exceeding the first stage pressure that will un-bypass the reactor scram on MSV position.
Distractor:	C is incorrect. DECREASE is used to regain margin to prevent exceeding the first stage pressure that will un-bypass the reactor scram on MSV position. Soak time lengthening is not required. If pressure was low (below 75 psia for more than 15 minutes) the soak time would have to be lengthened).

References Provided: None

Question 61 Cross References (table item links)

10CFR55

- 41(b)(7)

Cognitive Level

- 2

NUREG 1123 KA Catalog Rev. 2

- 241000 A4.18 2.9/2.8; Ability to manually operator and/or monitor in the control room: Turbine shell warming: Plant-Specific

Level of Difficulty

- Level 3: Higher order Knowledge item

LP

- O2-OPS-001-245-2-01 Rev. NA Item EO-1.7

Question Source

- New

PROC

- N2-OP-21 Rev. NA

Question Setting

- C1 (License class closed reference)

62 **SYSID: 22893** **Points: 1.00**

Plant startup is in progress at the completion of a 30 day refuel outage, with the following:

- RPV pressure is 150 psig
- Offgas (OFG) system and SJAEs are being prepared for service, as directed from N2-OP-101A, Plant Startup
- Radiation Monitor Delay pipe is NOT in service
- Charcoal Adsorber Purge is NOT being performed

Which one of the following describes the correct lineup for the OFG Charcoal Adsorbers per N2-OP-42 Offgas System and the reason for that lineup?

A. Bypassed to prevent moisture contamination of the OFG charcoal beds.

B. Bypassed to ensure sufficient flow to allow two OFG train operation.

C. In service to provide normal fission product removal prior to discharge.

D. In service to prevent excessive heating within the OFG charcoal beds.

Answer: A

Associated objective(s):

LC2 03-01 NRC EXAM DEVELOPMENT AREA

Question 62 Details

Question Type:	Multiple Choice
Topic:	NRC RO 62
System ID:	22893
User ID:	
Status:	Active
Must Appear:	No
Difficulty:	0.00
Time to Complete:	0
Point Value:	1.00
Cross Reference:	LC2 03-01
User Text:	
User Number 1:	0.00
User Number 2:	0.00
Comment:	N2-OP-42, E.4.14 CAUTION:

O2-OPS-001-271-2-00 EO-1.4

Answer: A is correct. Per N2-OP42, E.4.14 CAUTION.

* *

CAUTION

The following step prevents inadvertent water addition to the Charcoal Adsorbers during initial system startup and requires an entry into ODCM D3.2.4.

* *

Distractor: B is incorrect. Although they are bypassed, it is not to ensure adequate 2 train flow.

Distractor: C and D are incorrect. Bypassed to prevent water induction during initial system startup.

References Provided: None

Question 62 Cross References (table item links)

10CFR55

- 41(b)(10)

Cognitive Level

- 2

NUREG 1123 KA Catalog Rev. 2

- G2.1.23 3.9/4 Ability to perform specific system and integrated plant procedures during different modes of plant operation
- 271000 Offgas, Rev. NA

Level of Difficulty

- Level 3: Higher order Knowledge item

LP

- O2-OPS-001-271-2-01 Rev. na

Question Source

- New

PROC

- N2-OP-42 Rev. NA

Question Setting

- C1 (License class closed reference)

63 **SYSID: 22894** **Points: 1.00**

Which one of the following plant electrical distribution systems provides power to the Stack Gaseous Effluent Monitoring (GEMS) Panel RMS-CAB170?

A. UPS1H via NJS-US9

B. UPS1H via NJS-US6

C. UPS1G via NJS-US3

D. UPS1G via NJS-US4

Answer: A

Associated objective(s):

LC2 03-01 NRC EXAM DEVELOPMENT AREA

Question 63 Details

Question Type:	Multiple Choice
Topic:	NRC RO 63
System ID:	22894
User ID:	
Status:	Active
Must Appear:	No
Difficulty:	0.00
Time to Complete:	0
Point Value:	1.00
Cross Reference:	LC2 03-01
User Text:	
User Number 1:	0.00
User Number 2:	0.00
Comment:	N2-ELU-01, Attachment 79
	O2-OPS-001-272-2-01 EO-1.5

Answer: Justification: A is correct. UPS-1H supplies Stack GEMS Power from NJS-PNL901 (US9)

Distractor: B, C and D are incorrect. UPS-1H is not supplied from US6 and UPS1G supplies the Process Computer.

References Provided: N2-EOP-RPV

Question 63 Cross References (table item links)

10CFR55
- 41(b)(7)

Cognitive Level
- 1

NUREG 1123 KA Catalog Rev. 2
- 272000 K2.03 2.5/2.8, Knowledge of electrical power supplies to the following: Stack gas radiation monitoring system

Level of Difficulty
- Level 3: Higher order Knowledge item

LP
- O2-OPS-001-272-2-01, Rev. NA

Question Source
- New

PROC
- N2-EOP-RPV Rev. NA
- N2-ELU-01 Rev. NA

Question Setting
- C1 (License class closed reference)

64 **SYSID: 22895** **Points: 1.00**

The plant is shutdown for a refueling outage, with the following:

- A fuel bundle is dropped while irradiated fuel is being moved
- Reactor Building ventilation automatically isolates due to high radiation levels
- Both Standby Gas trains and Emergency Recirc Units fail to start
- Reactor Building differential pressure is + 0.05 inches wg

Which one of the following identifies the type of offsite radiation release that will occur, if any?

A. No release

B. Treated elevated

C. Untreated elevated

D. Untreated ground level

Answer: D

Associated objective(s):

LC2 03-01 NRC EXAM DEVELOPMENT AREA

Question 64 Details

Question Type:	Multiple Choice
Topic:	NRC RO 64
System ID:	22895
User ID:	
Status:	Active
Must Appear:	No
Difficulty:	0.00
Time to Complete:	0
Point Value:	1.00
Cross Reference:	LC2 03-01
User Text:	
User Number 1:	0.00
User Number 2:	0.00
Comment:	O2-OPS-001-261-2-01 EO-1.5

Answer: D is correct. based on the loss of secondary containment indicated by positive reactor building pressure. With GTS/HVR out of service the reactor building atmosphere is not treated.

References Provided: None

Question 64 Cross References (table item links)

10CFR55
- 41(b)(7)

Cognitive Level
- 1

NUREG 1123 KA Catalog Rev. 2
- 290001 K3.01 4/4.4*, Knowledge of the effect that a loss or malfunction of the SECONDARY CONTAINMENT will have on the following: Off-site radioactive release rates

Level of Difficulty
- Level 2: System operation and response

LP
- O2-OPS-001-261-2-01, Rev. NA

Question Source
- Bank

PROC
- N2-OP-52 Rev. NA

Question Setting
- C1 (License class closed reference)

65 **SYSID: 22896** **Points: 1.00**

The plant is operating at 100% power, with the following:

- A loss of power to Div II HVC*ACU1B, CONTROL ROOM AC FAN AND HVC*ACU2B RELAY ROOM AC FAN occurs
- HVC*ACU1A CONTROL ROOM AC FAN and HVC*ACU2A RELAY ROOM AC FAN are running

Which one of the following describes the impact of this configuration on **Control Room Envelope pressure**?

	Elevation 306 Control Room	Elevation 288 Relay Room
A.	Rises slightly	Rises slightly
B.	Rises slightly	Lowers slightly
C.	Lowers slightly	Rises slightly
D.	Lowers slightly	Lowers slightly

Answer: B

Associated objective(s):

LC2 03-01 NRC EXAM DEVELOPMENT AREA

Question 65 Details

Question Type:	Multiple Choice
Topic:	NRC RO 65
System ID:	22896
User ID:	
Status:	Active
Must Appear:	No
Difficulty:	0.00
Time to Complete:	0
Point Value:	1.00
Cross Reference:	LC2 03-01
User Text:	
User Number 1:	0.00
User Number 2:	0.00
Comment:	N2-OP-53A, D.23.0

O2-OPS-001-288-2-02 EO-1.6

Answer: B is correct.
N2-OP-53A D.23.0
On a loss of power, the discharge dampers for the Control Room and Relay Room Air Conditioning Units will fail open. Under these conditions, the operating ACU's will be supplying air back through the non-operating ACU's and possibly out of the ductwork via access door seals etc. This could result in higher than normal operating D/p in the area of the non-running ACU's. (DER 2-2000-1256).
Both Division II ACUs are located on El 306. The higher pressure occurs on 306. Both Div I (ACU1A and 2A) are on El 288.

Distractor: A, C and D are incorrect. E 306 pressure rises and El 288 pressure lowers with the Div II ACU outlet dampers failed open on loss of power.

References Provided: None

Question 65 Cross References (table item links)

10CFR55

- 41(b)(5)

Cognitive Level

- 2

NUREG 1123 KA Catalog Rev. 2

- 290003 A1.04 2.5/2.8; Ability to predict and/or monitor changes in parameters associated with operating the CONTROL ROOM HVAC controls including: Control room pressure

Level of Difficulty

- Level 3: Higher order Knowledge item

LP

- O2-OPS-001-288-2-02 Rev. na

Question Source

- New

PROC

- N2-OP-53A Rev. NA

Question Setting

- C1 (License class closed reference)

66 **SYSID: 22897** **Points: 1.00**

The plant is operating at 100% power, with the following:

- At 1830 complete Control Room front and back panel walkdowns were completed by the on-coming shift
- At 1845 and every 15 minutes thereafter the OATC performed front panel walkdowns
- At 2020 the OATC responds to an in plant annunciator test at a back panel and performs a back panel walkdown
- At 2045 the STA performs a backpanel walkdown

Which one of the following is correct regarding compliance with the Conduct of Operations section of the Operations Manual for the panel walkdowns performed?

	Front Panel	Back Panel
A.	Comply	Not Comply
B.	Comply	Comply
C.	Not Comply	Not Comply
D.	Not Comply	Comply

Answer: A

Associated objective(s):

LC2 03-01 NRC EXAM DEVELOPMENT AREA

Question 66 Details

Question Type:	Multiple Choice
Topic:	NRC RO 66
System ID:	22897
User ID:	
Status:	Active
Must Appear:	No
Difficulty:	0.00
Time to Complete:	0
Point Value:	1.00
Cross Reference:	LC2 03-01
User Text:	
User Number 1:	0.00
User Number 2:	0.00
Comment:	Operations Manual Tab OM.2.1.2 O3-OPS-006-343-3-51 EO-1.8

Answer:	A is correct. Back panel walkdowns are performed by licensed operators or the STA other than the OATC. Per OM.2.1.2 step n....OATC shall...perform front panel walkdowns at intervals not exceeding 15 minutes. The STA at 2045 is still late, since the OATC walkdown at 1845 didn't count.
Distractor:	B is incorrect. Back panel walkdown was performed by the OATC .
Distractor:	C is incorrect. Front panel walkdown requirements met by OATC performance.
Distractor:	D is incorrect. Front panel walkdown requirements met by OATC performance. Back panel walkdown was performed by the OATC .

References Provided: None

Question 66 Cross References (table item links)

10CFR55
- 41(b)(10)

Cognitive Level
- 2

NUREG 1123 KA Catalog Rev. 2
- G2.1.1 3.7/3.8 Knowledge of conduct of operations requirements

Level of Difficulty
- Level 2: System operation and response

LP
- O3-OPS-006-343-3-51, Rev. NA

Question Source
- New

PROC
- Operations Training Manual, Rev. NA

Question Setting
- C1 (License class closed reference)

67 **SYSID: 22898** **Points: 1.00**

The plant is in a Refueling Outage, with the following:

- Valve lineup of the Backfill System is being performed
- Valve 2RDS*V2058, RDS COMMON HDR ISOL has a Caution Clearance Section tag attached to the valve
- The tag indicates the valve is to remain closed until Backfill is ready to be initiated

Which one of the following describes the actions required to complete this valve lineup, per N2-VLU-01, Walkdown Order Valve Lineup and Valve Operations?

A. Leave the valve in its present position, notify the CSO and SSS of the discrepancy and note the discrepancy.

B. Leave the valve in its present position and indicate the Clearance Section Number in the INITIALS/DATE column.

C. Remove the Clearance Section tag, indicate the Clearance Section number on the valve lineup and position the valve.

D. Remove the Clearance Section tag and update the Clearance Section Tag Removal Sheet then position the valve.

Answer: B

Associated objective(s):

LC2 03-01 NRC EXAM DEVELOPMENT AREA

Question 67 Details

Question Type:	Multiple Choice
Topic:	NRC RO 67
System ID:	22898
User ID:	
Status:	Active
Must Appear:	No
Difficulty:	0.00
Time to Complete:	0
Point Value:	1.00
Cross Reference:	LC2 03-01
User Text:	
User Number 1:	0.00
User Number 2:	0.00
Comment:	Question derived from bank SYSID 21068

Answer:	B. Indicate Clearance Section Number in INITIALS/DATE is **correct** - Per N2-VLU-01, Section 5.1.4, the clearance section tag is not to be removed and the valve is not to be manipulated unless the specific conditions for manipulation of the valve are satisfied.
Distractor:	A. Notify the CSO/SSS of discrepancy is **wrong** - Per Section 5.1.5 of N2-VLU-01, valves that are out of expected position with a clearance section tag installed are NOT discrepancies.
Distractor:	C. Remove the Clearance Section Tag is **wrong** - Per GAP-OPS-02 Clearance Section tags are removed using the guidance provided on the Clearance Section Tag Removal Sheet. The presence of the tag is also to be noted on the valve lineup sheet under the INITIALS/DATE column.
Distractor:	D. Update the Clearance Section Tag Removal Sheet is **wrong** - Again, N2-VLU-01 speaks to this in 5.1.4. The valve is absolutely NOT to be repositioned per GAP-OPS-02 until the Clearance Section Holder or their supervisor releases the clearance section. This will be indicated in the Clearance System and a separate lineup performed to restore the system called a RESTORATION LINEUP.

References Provided: None

Question 67 Cross References (table item links)

10CFR55
- 41(b)(10)

Cognitive Level
- 1

NUREG 1123 KA Catalog Rev. 2
- G2.1.29 3.4/3.3 Knowledge of how to conduct and verify valve lineups

Level of Difficulty
- Level 2: System operation and response

Question Source
- Bank

PROC
- N2-VLU-01 Rev. NA

Question Setting
- C1 (License class closed reference)

68 **SYSID: 22899** **Points: 1.00**

The plant is operating in MODE 1, with the following:

- Main Generator load is 1,100 megawatts electric (MWe)
- Main Generator reactive loading is 250 MVARs to the Bus
- Main Generator hydrogen pressure is 60 psig
- Central Regional Power Control requests reactive loading be raised to 380 MVARs to the Bus.

Which one of the following identifies the acceptability of the requested MVAR loading and the maximum allowable MVAR loading for this condition, per N2-OP-68 Main Generator? (Estimated Capability Curve is provided)

A. <u>NOT</u> acceptable. Maximum reactive loading is approximately 300 MVARs.

B. <u>NOT</u> acceptable. Maximum reactive loading is approximately 350 MVARs.

C. acceptable. Maximum reactive loading is approximately 500 MVARs.

D. acceptable. Maximum reactive loading is approximately 600 MVARs.

Answer: C

Associated objective(s):

LC2 03-01 NRC EXAM DEVELOPMENT AREA

Question 68 Details

Question Type:	Multiple Choice
Topic:	NRC RO 68
System ID:	22899
User ID:	
Status:	Active
Must Appear:	No
Difficulty:	0.00
Time to Complete:	0
Point Value:	1.00
Cross Reference:	LC2 03-01
User Text:	
User Number 1:	0.00
User Number 2:	0.00
Comment:	Question derived from bank SYSID 16541

O2-OPS-001-245-2-02 - EO-1.7

Answer: C is correct - the requested reactive loading of 380 MVARs is acceptable. The approximate maximum reactive loading for current plant conditions would be approximately 500 MVARs.

References Provided: Generator Estimated Capability Curve

Question 68 Cross References (table item links)

10CFR55
- 41(b)(10)

Cognitive Level
- 2

NUREG 1123 KA Catalog Rev. 2
- G2.1.25 2.8/3.1 Ability to obtain and interpret station reference materials such as graphs, monographs, and tables which contain performance data

Level of Difficulty
- Level 2: System operation and response

LP
- O2-OPS-001-245-2-02 Rev. na

Question Source
- Bank

PROC
- N2-OP-68 Rev. NA

Question Setting
- C1 (License class closed reference)

69 **SYSID: 22900** **Points: 1.00**

Prior to placing the Low Pressure Core Spray System (CSL) in the full flow test lineup for surveillance testing, the Control Room Supervisor declares CSL inoperable, as required by station procedures.

Which one of the following identifies the basis for this action per surveillance procedure?

A. System is no longer in a normal standby configuration.

B. Discharge piping will drain if a Loss of Offsite Power occurs.

C. Time to establish injection will be outside the analyzed time frame.

D. Test return valve will not fully close against pump discharge pressure.

Answer: C

Associated objective(s):

LC2 03-01 NRC EXAM DEVELOPMENT AREA

Question 69 Details

Question Type:	Multiple Choice
Topic:	NRC RO 69
System ID:	22900
User ID:	
Status:	Active
Must Appear:	No
Difficulty:	0.00
Time to Complete:	0
Point Value:	1.00
Cross Reference:	LC2 03-01
User Text:	
User Number 1:	0.00
User Number 2:	0.00
Comment:	Question derived from bank SYSID 13412

O2-OPS-001-209-2-00 EO - 1.6

Answer: C is correct per N2-OP-32 precaution and limitation D.20.0 requires system to be declared inoperable if the pump is running with CSL*FV114 is not closed.

Distractor: A,B & D - none of these are reasons for declaring the system inoperable.

References Provided: None

Question 69 Cross References (table item links)

10CFR55

- 41(b)(10)

Cognitive Level

- 1

NUREG 1123 KA Catalog Rev. 2

- G2.2.12 3/3.4 Knowledge of surveillance procedures

Level of Difficulty

- Level 2: System operation and response

LP

- O2-OPS-001-209-2-00 Rev. na

Question Source

- Bank

PROC

- N2-OP-32 Rev. NA

Question Setting

- C1 (License class closed reference)

70 **SYSID: 22901** **Points: 1.00**

A clearance section tag for a system vent valve must be relocated so the valve can be removed from the system piping.

Which one of the following identifies who is required to authorize the relocation before it occurs per GAP-OPS-02, Control of Hazardous Energy, Clearance and Tagging?

A. On-shift SSS/SM alone.

B. CSO and CRS together.

C. CSO or CRS independently.

D. CSO or delegated licensed RO.

Answer: D

Associated objective(s):

LC2 03-01 NRC EXAM DEVELOPMENT AREA

Question 70 Details

Question Type:	Multiple Choice
Topic:	NRC RO 70
System ID:	22901
User ID:	
Status:	Active
Must Appear:	No
Difficulty:	0.00
Time to Complete:	0
Point Value:	1.00
Cross Reference:	LC2 03-01
User Text:	
User Number 1:	0.00
User Number 2:	0.00
Comment:	Question derived from bank SYSID 21070

CORE-GAP-OPS-002-3-01 EO-1.9

Answer: D. CSO or delegated RO is **correct** - ALL tag relocations shall be by the authority of the controller, as stated in 3.19.1. of GAP-OPS-02. The CSO performs the administrative function of issuing Clearance Sections as the agent for the SSS. The CSO may delegate this authority to another licensed RO per section 2.10 & 2.11

Distractor: A, B & C. Any option mentioning the SSS or CRS is **wrong** - the SSS responsibility as defined in GAP-OPS-02 is to authorize the isolation of equipment, ensure compliance with Tech Specs and verify adequacy of isolation boundaries.

References Provide: None

Question 70 Cross References (table item links)

10CFR55
- 41(b)(10)

Cognitive Level
- 1

NUREG 1123 KA Catalog Rev. 2
- G2.2.13 3.6/3.8 Knowledge of tagging and clearance procedures

Level of Difficulty
- Level 2: System operation and response

LP
- CORE-GAP-OPS-002-3-01, Rev. NA

Question Source
- Bank

PROC
- GAP-OPS-02 Rev. NA

Question Setting
- C1 (License class closed reference)

71 **SYSID: 22902** **Points: 1.00**

The plant is operating at 100% power. The following events occur:

- A Loss of Feedwater Heating has occurred.
- It is determined that MCPR dropped to 1.05 during the transient

Which one of the following actions is required to comply with Tech Specs?

A. Reduce power below 25% within 15 minutes.

B. Commence a reactor shutdown within 4 hours.

C. Fully insert all control rods within 2 hours.

D. Restore MCPR to within limits within 4 hours.

Answer: C

Associated objective(s):

LC2 03-01 NRC EXAM DEVELOPMENT AREA

Question 71 Details

Question Type:	Multiple Choice
Topic:	NRC RO 71
System ID:	22902
User ID:	
Status:	Active
Must Appear:	No
Difficulty:	0.00
Time to Complete:	0
Point Value:	1.00
Cross Reference:	LC2 03-01
User Text:	
User Number 1:	0.00
User Number 2:	0.00
Comment:	Question derived from bank SYSID 15994 Tech Spec 2.2.2, TS 2.1.1.2 O2-OPS-008-362-2-01 EO-8.0

Answer: C is correct per TS 2.1.1.2 and 2.2.2. Insert all insertable control rods with 2 hour completion time.

Distractor: A,B,D are incorrect and are variations of Thermal Limit Tech Spec actions.

References Provided: None

Question 71 Cross References (table item links)

10CFR55
- 41(b)(5)

Cognitive Level
- 1

NUREG 1123 KA Catalog Rev. 2
- G2.2.22 3.4/4.1; Knowledge of limiting conditions for operations and safety limits

Level of Difficulty
- Level 2: System operation and response

LP
- O2-OPS-008-362-2-01 Rev. NA Item NA

Question Source
- Bank

TECHSPEC
- 2.2.2 Rev. NA
- TS 2.1.1.2 Rev. NA Item NA

Question Setting
- C1 (License class closed reference)

72 **SYSID: 22903** **Points: 1.00**

The plant is in a refuel outage, with the following:

- A radiation accident has occurred on the refueling floor resulting in serious injury to a worker on the Refueling Platform
- The worker is still on the Refueling Platform
- Radiation levels in the area of the injured operator are 5000 mRem/hr.
- Emergency exposure limit for life saving operations has been authorized
- Individual providing assistance has a lifetime accumulated dose of 5000 mRem

Which one of the following is the maximum stay time for the individual providing life saving assistance to ensure the limits established in EPIP-EPP-15 Emergency Health Physics Procedure are not exceeded?

A. 1 hour

B. 2 hours

C. 4 hours

D. 5 hours

Answer: D

Associated objective(s):

LC2 03-01 NRC EXAM DEVELOPMENT AREA

Question 72 Details

Question Type:	Multiple Choice
Topic:	NRC RO 72
System ID:	22903
User ID:	
Status:	Active
Must Appear:	No
Difficulty:	0.00
Time to Complete:	0
Point Value:	1.00
Cross Reference:	LC2 03-01
User Text:	
User Number 1:	0.00
User Number 2:	0.00
Comment:	O3-OPS-006-350-3-33, EO-1.5

Answer:	D is correct. Based on correct limit of 25 Rem limit (life saving) and does not subtract the lifetime accumulated dose of 5000 mRem. 25R/5R per hr = 5 hours
Distractor:	A is incorrect. Based on incorrect limit of10 Rem limit (property) and incorrectly subtracts the lifetime accumulated dose of 5000 mRem. 10R – 5R = 5R/5R per hr = 1 hour
Distractor:	B is incorrect. Based on incorrect limit of10 Rem limit (property) and does not subtract the lifetime accumulated dose of 5000 mRem. 10R/5R per hr = 2 hours
Distractor:	C is incorrect. Based on correct limit of 25 Rem limit (life saving) and incorrectly subtracts the lifetime accumulated dose of 5000 mRem. 25R – 5R = 20R/5R per hr = 4 hours

References Provided: None

Question 72 Cross References (table item links)

10CFR55

- 41(b)(12)

Cognitive Level

- 2

NUREG 1123 KA Catalog Rev. 2

- G2.3.4 2.5/3.1 Knowledge of radiation exposure limits and contamination control, including permissible levels in excess of those authorized

Level of Difficulty

- Level 2: System operation and response

LP

- O3-OPS-006-350-3-33, Rev. NA

Question Source

- Bank

PROC

- EPIP-EPP-15 Rev. NA

Question Setting

- C1 (License class closed reference)

73 **SYSID: 22904** **Points: 1.00**

Your team is planning a job to be performed in an area classified as a high-radiation area due to a crud trap.

- The dose rate at the component to be worked is 400 mrem/hour
- Using a long-handled tool reduces the worker's exposure to ½ the dose rate at the component to be worked
- The job takes 1 hour without using the long-handled tool
- The job takes 1 ½ hours if the long-handled tool is used
- Installing temporary shielding on the crud trap will lower the dose rate at the component to be worked to 200 mrem/hour
- Installation and removal of temporary shielding adds 225 mrem of exposure

Which of the following options satisfies the requirement to perform the job with the **LEAST TOTAL EXPOSURE?**

A. Install shielding. Use the tool.

B. Install shielding. Do not use the tool.

C. Do not install shielding. Use the tool.

D. Do not install shielding. Do not use the tool.

Answer: C

Associated objective(s):

LC2 03-01 NRC EXAM DEVELOPMENT AREA

Question 73 Details

Question Type:	Multiple Choice
Topic:	NRC RO 73
System ID:	22904
User ID:	
Status:	Active
Must Appear:	No
Difficulty:	0.00
Time to Complete:	0
Point Value:	1.00
Cross Reference:	LC2 03-01
User Text:	
User Number 1:	0.00
User Number 2:	0.00
Comment:	Question derived from bank SYSID 21210

Answer:	C. Do not install shielding. use the tool. 400 x 0.5 x 1.5 = **300 mrem**
Distractor:	A. Install shielding. Use the tool. 225 + [(200 x 0.5) x 1.5] = **375 mrem**
Distractor:	B. Install shielding. do not use the tool. 225 + (200 x 1.0) = **425 mrem**
Distractor:	D. Do not install shielding. Do not use the tool. 400 x 1.0 = **400 mrem**

References Provided: None

Question 73 Cross References (table item links)

10CFR55

- 41(b)(12)

Cognitive Level

- 2

NUREG 1123 KA Catalog Rev. 2

- G2.3.10 2.9/3.3 Ability to perform procedures to reduce excessive levels of radiation and guard against personnel exposure

Level of Difficulty

- Level 3: Higher order Knowledge item

Question Source

- Bank

Question Setting

- C1 (License class closed reference)

74 **SYSID: 22905** **Points: 1.00**

A LOCA has occurred, with the following:

- Containment sprays are in service
- RHS Heat Exchanger Room flooding occurs
- All Reactor Building radiation levels are normal

Which one of the following is required concerning ventilating the Reactor Building?

A. Verify Reactor Building Ventilation is operating normally.

B. Operate Reactor Building Ventilation with LOCA signals overridden.

C. Verify both Standby Gas Trains remain running until EOPs are exited.

D. Operate one Standby Gas Train with the other shutdown until EOPs are exited.

Answer: B

Associated objective(s):

LC2 03-01 NRC EXAM DEVELOPMENT AREA

Question 74 Details

Question Type:	Multiple Choice
Topic:	NRC RO 74
System ID:	22905
User ID:	
Status:	Active
Must Appear:	No
Difficulty:	0.00
Time to Complete:	0
Point Value:	1.00
Cross Reference:	LC2 03-01
User Text:	
User Number 1:	0.00
User Number 2:	0.00
Comment:	Question derived from bank SYSID 16618 O2-OPS-006-344-2-08 EO - 1.2 Answer: **B** is correct - EOP-SC Step SC-1 conditional note, OK to defeat LOCA signal **References Provided: EOP-SC**

Question 74 Cross References (table item links)

10CFR55
- 41(b)(10)

Cognitive Level
- 1

NUREG 1123 KA Catalog Rev. 2
- G2.4.20 3.3/4 Knowledge of operational implications of EOP warnings, cautions, and notes

Level of Difficulty
- Level 2: System operation and response

LP
- O2-OPS-006-344-2-08 Rev. NA

Question Source
- Bank

PROC
- N2-EOP-SC Rev. NA

Question Setting
- C1 (License class closed reference)

EXAMINATION ANSWER KEY

U2 NRC REACTOR OPERATOR WRITTEN EXAMINATION 2005

75 **SYSID: 22906** **Points: 1.00**

Which one of the following is the responsibility of the Chief Shift Operator (CSO) when implementing EPIP-EPP-03, Search and Rescue?

A. Maintain overall control of search and rescue activities.

B. Assembles as a member of the search and rescue team.

C. Implement actions of Search/Rescue Operations Checklist.

D. Directs actual search and rescue activities outside the control room.

Answer: C

Associated objective(s):

LC2 03-01 NRC EXAM DEVELOPMENT AREA

Question 75 Details

Question Type:	Multiple Choice
Topic:	NRC RO 75
System ID:	22906
User ID:	
Status:	Active
Must Appear:	No
Difficulty:	0.00
Time to Complete:	0
Point Value:	1.00
Cross Reference:	LC2 03-01
User Text:	
User Number 1:	0.00
User Number 2:	0.00
Comment:	Question derived from bank SYSID 21175

EPIP-EPP-03, 2.1, 2.2, 2.3, 2.6

O3-OPS-006-350-3-23 EO-1.4

Answer:	C. CSO performs CSO checklist
Distractor:	A. SSS responsibility
Distractor:	B. Auxiliary Operators assemble as part of the search and rescue team
Distractor:	D. Fire Brigade leader is the search and rescue team leader in the plant

References Provided: None

Question 75 Cross References (table item links)

10CFR55
- 41(b)(11)

Cognitive Level
- 1

NUREG 1123 KA Catalog Rev. 2
- G2.4.39 3.3/3.1 Knowledge of the RO's responsibilities in emergency plan implementation

Level of Difficulty
- Level 2: System operation and response

LP
- O3-OPS-006-350-3-23, Rev. NA

Question Source
- Bank

PROC
- EPIP-EPP-03 Rev. NA

Question Setting
- C1 (License class closed reference)

U.S. Nuclear Regulatory Commission
Site-Specific
SRO Written Examination

Applicant Information

Name:

Date: May 9, 2005	Facility/Unit: Nine Nile Point / Unit 2
Region: I	Reactor Type: GE
Start Time:	Finish Time:

Instructions

Use the answer sheets provided to document your answers. Staple this cover sheet on top of the answer sheets. To pass the examination you must achieve a final grade of at least 80.00 percent overall, with 70.00 percent or better on the SRO-only items if given in conjunction with the RO exam; SRO-only exams given alone require a final grade of 80.00 percent to pass. You have 8 hours to complete the combined examination, and 3 hours if you are only taking the SRO portion.

Applicant Certification

All work done on this examination is my own. I have neither given nor received aid.

____
Applicant's Signature

Results

RO/SRO-Only/Total Examination Values	____ / ____ / ____ Points
Applicant's Score	____ / ____ / ____ Points
Applicant's Grade	____ / ____ / ____ Percent

EXAMINATION ANSWER KEY

U2 NRC SENIOR REACTOR OPERATOR WRITTEN EXAMINATION 2005

1 **SYSID: 22907** **Points: 1.00**

The plant is operating at 100% power, with the following:

12:00 on May 1: Line 5 is declared INOP.
08:00 on May 3: Div 1 DG is declared INOP.
12:00 on May 3: Line 5 is declared OPERABLE

16:00 on May 4: Div 3 DG is declared INOP
14:00 on May 5: Div 1 DG is declared OPERABLE.

06:00 on May 6: Line 5 is declared INOP.
08:00 on May 6: Div 3 DG is declared OPERABLE (delay in obtaining parts).

Which one of the following describes correct implementation of Tech Specs for this sequence of events?

A. Entry into REQUIRED ACTION requiring a plant shutdown existed at NO TIME during this sequence of events. Restore line 5 to operable status no later than 06:00 on May 9.

B. Entry into REQUIRED ACTION requiring a plant shutdown existed at NO TIME during this sequence of events. Restore line 5 to operable status no later than 12:00 on May 7.

C. At 18:00 on May 4, TS 3.8.1, REQUIRED ACTION F.1 was required to be entered but this action was exited as permitted by LCO 3.0.2 before the shutdown was required to be initiated. Restore line 5 to operable status no later than 06:00 on May 9.

D. At 16:00 on May 4, TS 3.8.1 REQUIRED ACTION G.1 was required to be entered and the plant was required to be placed into MODE 3 but this action was not completed. Restore line 5 to operable status no later than 12:00 on May 7.

Answer: B

Associated objective(s):

LC2 03-01 NRC EXAM DEVELOPMENT AREA

Question 1 Details

Question Type:	Multiple Choice
Topic:	NRC SRO 1
System ID:	22907
User ID:	
Status:	Active
Must Appear:	No
Difficulty:	0.00
Time to Complete:	0
Point Value:	1.00
Cross Reference:	LC2 03-01
User Text:	
User Number 1:	0.00
User Number 2:	0.00
Comment:	T.S. 3.8.1, Conditions A,B,D,E,F,G

Answer: B is correct. Correctly applying the modified time zero on initial entry into CONDITION A when Line 5 is declared inoperable at 12:00 on May 1 results in Line 5 restoration with completion time 6 days later on May 7 at 12:00. The completion time of 72 hours which started on 06:00 on May 6 (last Line 5 inop condition results in completion time is 06:00 on May 9) is limited to less time because of the "modified time zero – 6 days from discovery of failure to meet the LCO" which IS DISCUSSED IN THE TS BASES. Per TS BASES B3.8.1, RA A.3 DISCUSSION: the third completion time for required action A.3 established a limit on the maximum time allowed for any combination of required AC sources to be inoperable during any single contiguous occurrence of failing to meet the LCO. The 6 day completion time provides a limit on the time allowed in a specified condition after discovery of failure to meet the LCO. The "AND" connector between the 72 hours and 6 day completion times apply simultaneously, and the more restrictive must be met. The completion time of required action A.3 allows for an exception to the normal "time zero" for beginning the allowed outage time clock. This exception results in establishing the "time zero" at the time the LCO was INITIALLY NOT MET, instead of at the time Condition A was re-entered . Therefore, Line 5 must be operable no later than 6 days from declaring the LCO statement not met (which was 12:00 on May 1) which means that Line 5 must be operable by 12:00 on May 7 to avoid entering Condition F which is a Condition/Required Action for a plant shutdown.

Distractor: A is incorrect. The statement for restoring Line 5 to operable ".....no later than 06:00 on May 9" is incorrect. This choice is based on Completion Time of 72 hours which started on 06:00 on May 6, but does not account for the limit imposed by the modified time zero (6 days from discovery of failure to meet the LCO from initial entry into Condition A at 12:00 on May 1). Not applying the modified time zero results in a completion time of 06:00 on May 9 results, which is incorrect.

Distractor: C is incorrect. IF Condition F or Condition G was required to be entered, then "entry into a REQUIRED ACTION" that required a plant shutdown existed.
Condition F would be required if Associated Completion Time of Condition A,B,C,D or E is not met. The correct restoration time for restoring Line 5 is also incorrect. See discussion on choice A.

Distractor: D is incorrect. IF Condition F or Condition G was required to be entered, then "entry into a REQUIRED ACTION" that required a plant shutdown existed.
Worst case was 2 sources inoperable when Div 1 and Div 3 EDGs were inoperable together between 5/4 1600 and 5/5 1400. Since at no time were "Three or more required AC sources inoperable", then Condition G was not required to be entered.

References Provided: TS 3.8.1 (ALL, do not provide the TS bases).

Question 1 Cross References (table item links)

10CFR55
- 43(b)(2)

Cognitive Level
- 3

NUREG 1123 KA Catalog Rev. 2
- G2.2.25 2.5/3.7 Knowledge of bases in technical specifications for limiting conditions for operations and safety limits
- 295003 Partial or complete Loss of A.C. Power, Rev. NA

Level of Difficulty
- Level 3: Higher order Knowledge item

LP
- O2-OPS-008-362-2-10 Rev. na

Question Source
- New

TECHSPEC
- T.S.3.8.1 Rev. NA

Question Setting
- C1 (License class closed reference)

2 **SYSID: 22908** **Points: 1.00**

The plant is operating at 100% power, with the following:

06:00	High Pressure Core Spray System is out of service with RED clearance applied to CSH Pump breaker
08:00:00	A Control Room Evacuation is directed
08:00:15	RO scrams the reactor and all control rods insert
08:00:25	A Loss of Offsite Power occurs
08:01:00	The MSIVs are closed and the remaining immediate operator actions are completed
08:04:00	It is determined that RCIC cannot be started and the actions to perform Pseudo-LPCI are directed

08:06:00:	Started RHS*P1A
08:07:00:	Opened 4 ADS valves
08:08:00:	RHS A flow at about 7400 gpm

Which one of the following identifies the station procedure used to lineup injection AND the correct interpretation and action with regards to RPV water level at **08:08:30**?

A. N2-SOP-78 is used. Level is above TAF, and will remain above TAF without starting additional RHS pumps.

B. N2-SOP-78 is used. Level is below TAF, and will not be restored above TAF until after RHS B loop injection is established.

C. N2-EOP-6 Attachment 30 is used. Level is above TAF, and will remain above TAF without starting additional RHS pumps.

D. N2-EOP-6 Attachment 30 is used. Level is below TAF, and will not be restored above TAF until after RHS B loop injection is established.

Answer: A

Associated objective(s):

LC2 03-01 NRC EXAM DEVELOPMENT AREA

Question 2 Details

Question Type:	Multiple Choice
Topic:	NRC SRO 2
System ID:	22908
User ID:	
Status:	Active
Must Appear:	No
Difficulty:	0.00
Time to Complete:	0
Point Value:	1.00
Cross Reference:	LC2 03-01
User Text:	
User Number 1:	0.00
User Number 2:	0.00
Comment:	O2-OPS-001-296-2-01 EO-1.7

Answer: A. Per N2-SOP-78; step 5.11: Control of RCIC, ADS and RHS will be transferred to the RSS immediately upon evacuation of the Control Room. These actions are performed as quickly as possible to allow a determination of the availability of RCIC. If RCIC is not available, a contingency for the use of LPCI as an injection source is provided. This contingency will direct the operator to place RHS pump A or B into service and then open all four remote shutdown ADS valves. To avoid lowering level below the top of active fuel, the ADS valves must be opened within (9) minutes of the Scram and MSIV isolation. RHS will then be used to refill the Reactor and maintain normal Reactor level.

Distractor: B is incorrect. Establishing pseudo-LPCI within 9 minutes assures level above TAF at 08:08:30 since the requirement is to open 4 ADS valves within 9 minutes.

Distractor: C is incorrect. EOP-6 Attachment 30 is not used during Control Room Evacuation but establishes the same lineup in EOPs in EOP implementation from the Control Room. Establishing pseudo-LPCI within 9 minutes assures level above TAF at 08:08:30 since the requirement is to open 4 ADS valves within 9 minutes. However, level will remain above TAF with no additional RHS injection.

Distractor: D is incorrect: EOP-6 Attachment 30 is not used during Control Room Evacuation but establishes the same lineup in EOPs in EOP implementation from the Control Room. Establishing pseudo-LPCI within 9 minutes assures level above TAF at 08:08:30 since the requirement is to open 4 ADS valves within 9 minutes.

References Provided: None

Question 2 Cross References (table item links)

10CFR55
- 43(b)(5)

Cognitive Level
- 1

NUREG 1123 KA Catalog Rev. 2
- 295016 AA2.02 4.2*/4.3*, Ability to determine and/or interpret the following as they apply to CONTROL ROOM ABANDONMENT: Reactor water level

Level of Difficulty
- Level 2: System operation and response

LP
- O2-OPS-001-296-2-01, Rev. NA

Question Source
- New

PROC
- N2-SOP-78 Rev. NA

Question Setting
- C1 (License class closed reference)

3 **SYSID: 22909** **Points: 1.00**

The plant is operating at 100% power, with the following:

- All drywell cooling is lost due to an inadvertent Division I Containment isolation signal
- Drywell pressure is 0.70 psig and rising slowly
- Drywell absolute pressure is 15.4 psia
- Drywell temperature is 151°F and rising slowly

Which one of the following is the maximum time allowed by Technical Specifications before the plant is required to be in MODE 3?

A. 4 hours

B. 13 hours

C. 16 hours

D. 20 hours

Answer: D

Associated objective(s):

LC2 03-01 NRC EXAM DEVELOPMENT AREA

Question 3 Details

Question Type:	Multiple Choice
Topic:	NRC SRO 3
System ID:	22909
User ID:	
Status:	Active
Must Appear:	No
Difficulty:	0.00
Time to Complete:	0
Point Value:	1.00
Cross Reference:	LC2 03-01
User Text:	
User Number 1:	0.00
User Number 2:	0.00
Comment:	O2-OPS-001-221-2-01 EO-1.11

This question derived from bank SYSID 17828

Answer:	D is correct. Per LCO 3.6.1.5, Drywell temperature is above the LCO limit. Required Action A.1. Eight (8) hours to restore, then 12 hour to be in Mode 3
Distractor:	B is incorrect. Per LCO 3.6.1.4, Drywell and Suppression Chamber pressure are within the LCO limit. 15.4 psia is within the allowable range. One (1) hour to restore and 12 hours to be in Mode 3 for total completion time of 13 hours. Misapplying LCO 3.6.1.4 will result in this condition.
Distractor:	A is incorrect. Actions associated with bypassing Primary Containment Isolation Valve, which has not been done (LCO 3.6.1.3). Misapplying 3.6.1.3 can result in 4 hour completion time for Condition A.
Distractor:	C is incorrect. Actions associated with bypassing Primary Containment Isolation Valve, which has not been done (LCO 3.6.1.3). Misapplying 3.6.1.3 can result in 4 hour to restore and 12 hours to be in Mode 3 for total completion time of 16 hours.

References Provided: Tech Spec 3.6.1.3, 3.6.1.4, 3.6.1.5

10CFR 55.43(b)(5) Note: Selection of correct procedure is implied rather than stated. To select the correct answer, the appropriate procedure or knowledge of that procedure was required.

Question 3 Cross References (table item links)

10CFR55

- 43(b)(5)

Cognitive Level

- 2

NUREG 1123 KA Catalog Rev. 2

- 295020 AA2.02 3.3/3.4; Ability to determine and/or interpret the following as they apply to INADVERTENT CONTAINMENT ISOLATION: Drywell/containment temperature

Level of Difficulty

- Level 3: Higher order Knowledge item

LP

- O2-OPS-001-221-2-01 Rev. na

Question Source

- Bank

TECHSPEC

- T.S. 3.6.1.5 Rev. NA

Question Setting

- C1 (License class closed reference)

4 **SYSID: 22910** **Points: 1.00**

The plant is experiencing a transient, with the following:

- One (1) control rod is at position 48, all other control rods are fully inserted
- RPV pressure is 750 psig and lowering 50 psig per minute
- RPV level is -70 inches (Fuel Zone) and lowering eight (8) inches per minute
- Preferred injection systems cannot be started
- Alignment of alternate injection systems has been directed but none of the these systems are reported as aligned
- RHS Service Water Crosstie will be aligned and available for injection in five (5) minutes

Which one of the following is the correct EOP action to be executed at this time based on the above conditions?

A. EOP-RPV is required.

B. EOP-C4 is required.

C. EOP-C2 is required.

D. EOP-C3 is required.

Answer: D

Associated objective(s):

LC2 03-01 NRC EXAM DEVELOPMENT AREA

Question 4 Details

Question Type:	Multiple Choice
Topic:	NRC SRO 4
System ID:	22910
User ID:	
Status:	Active
Must Appear:	No
Difficulty:	0.00
Time to Complete:	0
Point Value:	1.00
Cross Reference:	LC2 03-01
User Text:	
User Number 1:	0.00
User Number 2:	0.00
Comment:	O2-OPS-006-344-2-15 EO 1.2 N2-EOP-RPV, L-12 AND L-13

Answer:	D. Under the conditions presented, steam cooling (EOP-C3) is required (EOP-RPV L-12 and L-13). In the steam cooling EOP RPV blowdown will be required in the next 2 minutes (-55 inches) before the alternate injection system is aligned.
Distractor:	A. EOP-RPV is exited because no injection sources are aligned with a pump running. EOP-C3 is entered. Plausible because the candidate may determine that it is okay to defer blowdown and steam cooling while the alternate injection system is aligned. Also plausible because EOP-C2 requires re-entry into EOP-RPV after the blowdown is performed.
Distractor:	B. EOP-C4, RPV flooding is not required because there is no reason to believe that RPV water level is not known. The indicated RPV water level is valid and even if in EOP-C5 (ATWS) RPV level is still valid since reactor power level would be less than 4% for the control rod position specified.
Distractor:	C. If it is determined that EOP-C5 is appropriate and EOP-RPV is exited based on the control rod positions then RPV blowdown is appropriate. However, EOP-C5 is not entered because the reactor will remain shutdown under all conditions without boron based on the shutdown margin definition.

References Provided: EOP-RPV, EOP-C5, EOP-C4,

EOP-C2

Question 4 Cross References (table item links)

10CFR55

- 43(b)(5)

Cognitive Level

- 3

NUREG 1123 KA Catalog Rev. 2

- G2.4.6 3.1/4 Knowledge symptom based EOP mitigation strategies
- 295031 Reactor Low Water Level, Rev. NA

Level of Difficulty

- Level 3: Higher order Knowledge item

LP

- O2-OPS-006-344-2-15, Rev. NA

PROC

- N2-EOP-RPV Rev. NA

Question Setting

- C1 (License class closed reference)

5 **SYSID: 22911** **Points: 1.00**

An ATWS is in progress. Following the actions to terminate and prevent injection the following conditions exist

- Bypass valves failed to open and cannot be opened
- Reactor pressure is being maintained 800-1000 psig; 2 SRVs are open
- Suppression Pool average water temperature is 120°F
- Suppression Pool level is 199.8 feet
- Control rod insertion has not been established
- SLS failed to inject and cannot be started
- No alternate boron injection system is injecting
- When indicated level reaches -40 inches (FZ), direction is given to reestablish injection and maintain indicated level -70 to -40 inches (FZ)
- With indicated water level at -40 inches (FZ), RPV injection is re-established
- Ten (10) seconds later indicated water level is -10 inches (FZ); reactor power is 5%

Which one of the following is the correct action in response to this transient?

A. Terminate and prevent injection again.

B. Perform a RPV Blowdown per EOP-C2.

C. Direct a new level control band of -70 to -10 inches (FZ).

D. Reduce the injection rate until in the assigned -70 to -40 inches band.

Answer: A

Associated objective(s):

LC2 03-01 NRC EXAM DEVELOPMENT AREA

Question 5 Details

Question Type:	Multiple Choice
Topic:	NRC SRO 5
System ID:	22911
User ID:	
Status:	Active
Must Appear:	No
Difficulty:	0.00
Time to Complete:	0
Point Value:	1.00
Cross Reference:	LC2 03-01
User Text:	
User Number 1:	0.00
User Number 2:	0.00
Comment:	O2-OPS-006-344-2-17 EO-1.2

N2-EOP-C5, N2-EOP-RPV, EOP-BASES, NER-2M-039 R5

Answer: A. Level rise will cause reactor power to increase and exceed 4%. Override conditions are met to terminate and prevent injection until reactor power lowers below 4% or level is at TAF(-52" FZ at 800 psig).

Distractor: B. There is initially a 20°F margin to HCTL, and rise in suppression pool temperature will not require RPV Blowdown at this time. Reactor pressure will be reduced in a controlled manner to stay within the HCTL if it is being challenged, and then if exceeded and cannot restore within HCTL a blowdown would be performed.

Distractor: C. Level rise will cause reactor power to increase and exceed 4%. Override conditions are met to terminate and prevent injection until reactor power lowers below 4% or level is at TAF(-52" FZ at 800 psig).

Distractor: D. Restoring to the directed level control band is not appropriate, Override conditions are met to terminate and prevent injection again.

References Provided: EOP-C5

10CFR 55.43(b)(5) Note: Selection of correct procedure is implied rather than stated. To select the correct answer, the appropriate procedure or knowledge of that procedure was required.

Question 5 Cross References (table item links)

10CFR55

- 43(b)(5)

Cognitive Level

- 3

NUREG 1123 KA Catalog Rev. 2

- 295037 EA2.01 4.2*/4.3*, Ability to determine and/or interpret the following as they apply to SCRAM CONDITION PRESENT AND REACTOR POWER ABOVE APRM DOWNSCALE OR UNKNOWN: Reactor power

Level of Difficulty

- Level 3: Higher order Knowledge item

LP

- O2-OPS-006-344-2-17 Rev. na

Question Source

- New

PROC

- EOP BASES DOCUMENT Rev. NA
- N2-EOP-RPV Rev. NA
- N2-EOP-C5 Rev. NA
- NER-2M-039, Rev. NA

Question Setting

- C1 (License class closed reference)

EXAMINATION ANSWER KEY

U2 NRC SENIOR REACTOR OPERATOR WRITTEN EXAMINATION 2005

6 **SYSID: 22912** **Points: 1.00**

The plant is experiencing a transient, with the following:

- A primary system leak has occurred in the secondary containment
- Attempts to isolate the leak have been successful
- Highest Secondary Containment temperature is 165° F and temperatures have been stabilized
- Field Survey at the site boundary indicate TEDE dose of 50 mRem
- EDAMS TEDE dose projection is reported as 120 mRem at the site boundary

Which one of the following actions is required based on these radiological conditions?

A. Declare an ALERT. Entry into EOP-C2 is required.

B. Declare an ALERT. Entry into EOP-C2 is NOT required.

C. Declare a SITE AREA EMERGENCY. Entry into EOP-C2 is required.

D. Declare a SITE AREA EMERGENCY. Entry into EOP-C2 is NOT required.

Answer: B

Associated objective(s):

LC2 03-01 NRC EXAM DEVELOPMENT AREA

Question 6 Details

Question Type:	Multiple Choice
Topic:	NRC SRO 6
System ID:	22912
User ID:	
Status:	Active
Must Appear:	No
Difficulty:	0.00
Time to Complete:	0
Point Value:	1.00
Cross Reference:	LC2 03-01
User Text:	
User Number 1:	0.00
User Number 2:	0.00
Comment:	O3-OPS-006-350-3-30 EO-1.3

Answer:	B is correct. ACTUAL field survey data indicates conditions are above the ALERT value of 10 mRem. EDAMS dose projection is above the SAE level of 100 mRem, the correct classification is SAE 5.2.4. ACTUAL field survey data is used over the projected.
Distractor:	A is incorrect. Dose is significantly below the GE level requiring Blowdown per EOP-RR step RR-1, entry into EOP-C2 is not required. With the temperatures stabilized below 212° F RPV Blowdown is also not warranted by EOP-SC. Conditions are not going to reach the GE values because the leak is isolated.
Distractor:	C and D are incorrect. ALERT is classified based on ACTUAL plant data and not the projected data when ACTUAL data is available.

References Provided: EPIP-EPP-02 Attachment 1 EAL, N2-EOP-SC/RR

Question 6 Cross References (table item links)

10CFR55
- 43(b)(5)

Cognitive Level
- 2

NUREG 1123 KA Catalog Rev. 2
- 295038 EA2.03 3.5*/4.3*; Ability to determine and/or interpret the following as they apply to HIGH OFF-SITE RELEASE RATE: Radiation levels

Level of Difficulty
- Level 3: Higher order Knowledge item

LP
- O3-OPS-006-350-3-30, Rev. NA

Question Source
- New

PROC
- N2-EOP-SC Rev. NA
- EPIP-EPP-02 Rev. NA
- N2-EOP-RR Rev. NA

Question Setting
- C1 (License class closed reference)

7 **SYSID: 22913** **Points: 1.00**

The plant is experiencing an ATWS transient, with the following:

- An Alert was declared 65 minutes ago
- Emergency response facilities are activated

- 849127, FIRE DETECTED PNL128 W WALL / 261, alarms
- Computer Point Fire Detection:
  - ➢ 00-061-1-5, 333XL E261 Div 1 SWGR
  - ➢ 00-061-1-7, 333XL E261 Div 1 SWGR
- Discharge Light for Zone 333XL indicates 2FPL-AOV106 is open

Which one of the following is the correct action at this time in response to the above conditions?

A. Per EPIP-EPP-5A, direct an announcement for the fire brigade to report to the fire location.

B. Per EPIP-EPP-5A, direct an announcement for the fire brigade to report to the alarming fire panel.

C. Per EPIP-EPP-28, direct an announcement for the fire brigade to report the fire location.

D. Per EPIP-EPP-28, direct an announcement for the fire brigade to report to the OSC.

Answer: D

Associated objective(s):

LC2 03-01 NRC EXAM DEVELOPMENT AREA

Question 7 Details

Question Type:	Multiple Choice
Topic:	NRC SRO 7
System ID:	22913
User ID:	
Status:	Active
Must Appear:	No
Difficulty:	0.00
Time to Complete:	0
Point Value:	1.00
Cross Reference:	LC2 03-01
User Text:	
User Number 1:	0.00
User Number 2:	0.00
Comment:	O3-OPS-006-350-3-42 EO 1.2

N2-ARP-01, Attachment 18, ARP 849127
EPIP-EPP-28, Attachment 1, OP-47

Answer: D. When credible evidence exists of a fire condition within the protected area, then per EPIP-EPP-28, direct the CSO to implement the CSO fire fighting checklist.

The definition of CONFIRMED FIRE is a condition in which credible evidence exists that a fire is actually occurring. A fire may be considered as confirmed given any of the following: fire alarm/annunciator AND suppression system activation accompanied by actual flow or discharge, or Fire Brigade/Leader report, or SSS judgment.

Per the fire fighting checklist, EPIP-EPP-28, Attachment 1:

If the OSC has not been activated then the fire brigade shall report to the fire location. If the OSC is activated, the fire brigade shall report to the OSC. If the location of the alarm is a CO2 protected area, immediately evacuate all personnel from the fire location and all areas adjacent to and below this area.

This area is a CO2 area as identified by the "L" in the computer printout.

Control switches are labelled with zone numbers. Zone numbers are followed by 2 letters which indicate the type of suppression for the zone, as shown on the following table.

First Letter

S	Auto initiation of fire suppression if a single detector senses a fire.
X	Auto initiation of fire suppression by cross zone if a detector in each loop of detection in the same zone senses a fire.
N	No auto initiation of fire suppression.

The second letter indicates the type of suppression agent.

F - Foam	G - Halon	L - Low Pressure Co_2
W - Water	Z - None	

Zones designated by X are cross zones which contain two fire detection loops. One detector sensing a fire will bring in an alarm and no suppression. When a detector from the other loop senses a fire it will bring in an alarm and activate the fire suppression system.

Distractor: A.& B incorrect. EPIP-EPP-5 is for Local Area evacuation announcement, EPP-28 directs Firé Brigade to go to OSC with OSC activated.

Distractor: C. EPIP-28 directs the announcement for the fire brigade to go to OSC if it is manned.

References Provided: None

Question 7 Cross References (table item links)

10CFR55

- 43(b)(5)

Cognitive Level

- 1

NUREG 1123 KA Catalog Rev. 2

- G2.1.14 2.5/3.3 Knowledge of system status criteria which require the notification of plant personnel
- 600000 Plant Fire On Site

Level of Difficulty

- Level 2: System operation and response

LP

- O3-OPS-006-350-3-42, Rev. NA

Question Source

- New

PROC

- EPIP-EPP-28 Rev. NA
- N2-ARP-01 Rev. NA

Question Setting

- C1 (License class closed reference)

8 **SYSID: 22914** **Points: 1.00**

The plant is operating at 100% power, with the following:

- Annunciator 603103, RPS A REACTOR PRESSURE HIGH TRIP, alarms
- Computer Point, ISCUC05 RPS A1 RX PRESS HI TR, alarms
- I&C reports instrument 2ISC*PIS1678 (B22-N678A RPV HIGH PRESS, 2CEC*PNL609) is failed high
- The plant responded per design

Which one of the following is the correct action in response to the above conditions?

A. Maintain the half scram on RPS Channel A. The ATWS RPT function remains operable.

B. Initiate actions to be in MODE 3 within 12 hours. The ATWS RPT function remains operable.

C. Maintain the half scram on RPS Channel A and trip the associated ATWS RPT channel within 14 days.

D. Initiate actions to be in MODE 2 within 6 hours because of the inoperable ATWS RPT function.

Answer: A

Associated objective(s):

LC2 03-01 NRC EXAM DEVELOPMENT AREA

Question 8 Details

Question Type:	Multiple Choice
Topic:	NRC SRO 8
System ID:	22914
User ID:	
Status:	Active
Must Appear:	No
Difficulty:	0.00
Time to Complete:	0
Point Value:	1.00
Cross Reference:	LC2 03-01
User Text:	
User Number 1:	0.00
User Number 2:	0.00
Comment:	O2-OPS-001-212-2-00 EO-1.11

T.S. 3.3.1.1, Condition A and Table 3.3.1.1-1
Function 3
N2-OP-34
ARP 603103

Answer: A. There are four instruments (2 per channel) for the Reactor Vessel Steam Dome Pressure High function of RPS Instrumentation. Refer to TS Table 3.3.1.1-1, Function 3. With one of the instruments inoperable, place the associated channel in trip within 12 hours or place the associated trip system in trip within 12 hours. For the failed instrument, a half scram automatically occurred satisfying the requirement of TS 3.3.1.1, Condition A, RA A.2. As long as the half scram is inserted on RPS channel A, the plant can operate indefinitely in this condition until the instrument is restored to operable status at which time the half scram can be reset. ATWS RPT function is not provided by this same instrument. This function remains operable.

Distractor: B. TS Table 3.3.1.1-1, Function 3, includes a reference to Condition H (be in Mode 3 within 12 hours) however, this condition is only entered if the actions of Condition A are not performed within the specified completion time. If the actions of Condition A are not performed within the specified completion time then Condition d would be entered which requires immediate entry into Condition

H. It is a common misconception that the condition referenced in the instrument function table must be entered immediately. A correct understanding of the use and application of the information in the instrument table will discriminate the competent and less than competent SRO.

Distractor: C. ATWS RPT function is not provided by this same instrument. This function remains operable. If the candidate incorrectly determines this function is also inoperable (incorrectly determines instrument provides both the RPS function and also the ATWS function), then both maintaining the half scram inserted on RPS Channel A and tripping the associated ATWS channel within 14 days would be correct.

Distractor: D. ATWS RPT function is not provided by this same instrument. This function remains operable. If the candidate incorrectly determines this function is also inoperable (incorrectly determines instrument provides both the RPS function and also the ATWS function) and also incorrectly applies the information in TS 3.3.4.2 then it could be incorrectly determined that the plant must be in Mode 2 within 6 hours.

References Provided: P&ID 28A (already provided for RO) and JUST TS 3.3.1.1 pages 3.3.1.1-1, 2, 3 and 9 (includes Table 3.3.1.1-1 page 2 of 3). Must leave allowable values column intact because this is required for SRO 17. NO SURV REQUIREMENTS and NO BASES allowed, TS 3.3.4.2 (NO SURV REQUIREMENTS and NO BASES). *NO SR and NO BASES for these two specs (3.3.1.1 and 3.3.4.2) because they could provide the answer other question intended to be answered from memory.*

P&ID 28 provides enough information to determine instrument channel layout.

Question 8 Cross References (table item links)

10CFR55
- 43(b)(2)

Cognitive Level
- 3

NUREG 1123 KA Catalog Rev. 2
- G2.2.22 3.4/4.1; Knowledge of limiting conditions for operations and safety limits
- 295007 High Reactor Pressure, Rev. NA

Level of Difficulty
- Level 3: Higher order Knowledge item

LP
- O2-OPS-001-212-2-00 Rev. na

Question Source
- New

PROC
- N2-OP-34 Rev. NA

TECHSPEC
- T.S.3.3.1.1 Rev. NA

Question Setting
- C1 (License class closed reference)

9 **SYSID: 22915** **Points: 1.00**

The plant is in MODE 5 with core reload in progress per N2-FHP-13.3 Core Shuffle with the following:

0800	Annunciator 875111, SPENT FUEL POOL LEVEL HIGH/LOW alarms
0800	Spent Fuel Pool (SFP) level is 352 ft 9 inches and steady
0802	2SFC*AOV33A and B, SFP NORMAL MAKEUP are open and SFP level begins to rise
0815	An irradiated fuel bundle is being lowered into the core
0816	A malfunction of the Refuel Bridge causes the grapple and fuel bundle to rapidly lower the last 4 inches into the core
0817	Annunciator 603209, SRM SHORT PERIOD alarms and clears 5 seconds later
0818	SRM count rates are rising steadily

Which one of the following actions is required to be taken and what is the reason for that action?

A. Declare an Unusual Event because excessive SFP leakage is occurring.

B. Evacuate the Refuel Floor because an irradiated fuel bundle has been dropped.

C. Initiate Boron injection to the core because an inadvertent criticality event is occurring.

D. Remove the fuel bundle within 1 hour because Shutdown Margin is not within LCO limits.

Answer: C

Associated objective(s):

LC2 03-01 NRC EXAM DEVELOPMENT AREA

Question 9 Details

Question Type:	Multiple Choice
Topic:	NRC SRO 9
System ID:	22915
User ID:	
Status:	Active
Must Appear:	No
Difficulty:	0.00
Time to Complete:	0
Point Value:	1.00
Cross Reference:	LC2 03-01
User Text:	
User Number 1:	0.00
User Number 2:	0.00
Comment:	O2-OPS-001 234-2-00 EO-1.7

Answer:	C is correct. Inadvertent Criticality is occurring with SRM count rate rising steadily. Per N2-SOP-39, initiate SLS injection.
Distractor:	A is incorrect. SFP level is being recovered by the normal makeup valves, 2SFC*AOV33A and B. An Unusual Event (UE 1.5.1) declaration is required if SFP level cannot be restored and maintained above the low water level alarm.
Distractor:	B is incorrect. Grapple lowered 4 inches and there is no indication that the bundle is no longer grappled. A dropped fuel bundle event is NOT in progress.
Distractor:	D is incorrect. Removing fuel bundle does not restore SDM per the LCO. Mode 5 actions require immediate suspension of core alterations and do not provide a 1 hour completion time.

Question 9 Cross References (table item links)

10CFR55
- 43(b)(5)

Cognitive Level
- 1

NUREG 1123 KA Catalog Rev. 2
- G2.1.32 3.4/3.8 Ability to explain and apply system limits and precautions
- 295014 Inadvertant Reactivity Addition, Rev. NA

Level of Difficulty
- Level 3: Higher order Knowledge item

LP
- O2-OPS-001-260-2-00, Rev. NA

Question Source
- New

PROC
- N2-SOP-39 Rev. NA

Question Setting
- C1 (License class closed reference)

10 **SYSID: 22916** **Points: 1.00**

Which one of the following Radiation Monitoring events requires that you assume the role as Emergency Director (ED)?

A. A coolant leak at one control rod HCU causes the local ARM to indicate yellow on DRMS.

B. When changing a TIP the general area ARM goes offscale high until the TIP is in the transfer cask.

C. During LPRM removal, one local ARM goes upscale before the LPRM is lowered and submerged ten feet.

D. A fuel assembly dropped onto the reactor core causes an automatic containment isolation.

Answer: D

Associated objective(s):

LC2 03-01 NRC EXAM DEVELOPMENT AREA

Question 10 Details

Question Type:	Multiple Choice
Topic:	NRC SRO 10
System ID:	22916
User ID:	
Status:	Active
Must Appear:	No
Difficulty:	0.00
Time to Complete:	0
Point Value:	1.00
Cross Reference:	LC2 03-01
User Text:	
User Number 1:	0.00
User Number 2:	0.00
Comment:	O3-OPS-006-350-3-30 EO-1.3

EPIP-EPP-02, ATT 1 EAL

Answer: D. A fuel assembly dropped in the reactor cavity causing containment isolation means that fuel assembly damage occurred. The perforation of fuel cladding caused high radiation levels on the refueling floor due to gaseous release. When radiation monitors 2HVS*RE14A or RE14B actuate, a secondary containment isolation results.
Per EAL 1.4.2: Valid Rx Bldg above Refueling Floor Radiation Monitor 2HVR*RE14A or 2HVR*RE14B, Gaseous Radiation Monitors (Channel 1) isolation due to a refuel floor event, the event is classified as an alert per EPIP-EPP-02 and EAL.
Per EPIP-EPP-02, 2.1: Upon initial declaration of an emergency, assumes the role of SSS/Emergency Director (SSS/ED) and functions as the SSS/ED until relieved of those duties by the on-call ED/RM, other SRO, or the emergency is terminated.
Declaring an alert requires assuming the role of the Emergency Director.
Per N2-SOP-39 discussion 5.4.2: See EPIP-EPP-02, Attachment 1, 9.1, Other for event classification following a dropped fuel bundle or other events which have the potential to have caused damage to fuel bundles.

Distractor: A. This is below the alarm setpoint (indicates RED). Emergency classification is required when value is

100 times the DRMS alarm setpoint.

Distractor: B. Must be sustained high, this returns to normal. Must be an uncontrolled process.

Distractor: C. Must be sustained high, this returns to normal when the LPRM is lowered. Must be an uncontrolled process.

References Provided: EPIP-EPP-02, Attachment 1, EAL

Question 10 Cross References (table item links)

10CFR55
- 43(b)(4)

Cognitive Level
- 2

NUREG 1123 KA Catalog Rev. 2
- 295033 EA2.01 3.8/3.9, Ability to determine and/or interpret the following as they apply to SECONDARY CONTAINMENT AREA RADIATION LEVELS: Area radiation levels

Level of Difficulty
- Level 2: System operation and response

LP
- O3-OPS-006-350-3-30, Rev. NA

Question Source
- New

PROC
- EPIP-EPP-02 Rev. NA

Question Setting
- C1 (License class closed reference)

11 **SYSID: 22917** **Points: 1.00**

The plant is in MODE 3, following a planned shutdown. The shutdown was achieved using N2-OP-101C Section G.2.0 Reactor Shutdown by Mode Switch to Shutdown Scram (Soft Scram), with Feedwater Level Control in Manual. Reactor Water Level is being controlled at 150 inches and stable.

THEN...... Reactor water level lowers to 95 inches due to an equipment failure resulting in the following:

- HPCS initiates
- HPCS Diesel Generator fails to start
- HPCS secured per N2-OP-33, Section G.1.0, Shutdown to Standby Following Initiation
- Operators restore level control to the normal band 160 – 200 inches and are controlling Reactor Water Level with Feedwater Level Control in Manual

Which one of the following is the correct reporting requirement for the above conditions?

A. 4 hour report. NO LER is required.

B. 4 hour report. LER is required within 60 days.

C. 8 hour report. NO LER is required.

D. 8 hour report. LER is required within 60 days.

Answer: B

Associated objective(s):

LC2 03-01 NRC EXAM DEVELOPMENT AREA

Question 11 Details

Question Type:	Multiple Choice
Topic:	NRC SRO 11
System ID:	22917
User ID:	
Status:	Active
Must Appear:	No
Difficulty:	0.00
Time to Complete:	0
Point Value:	1.00
Cross Reference:	LC2 03-01
User Text:	
User Number 1:	0.00
User Number 2:	0.00
Comment:	O3-OPS-008-361-3-02

10CFR50.72(b)(2)(iv)(A)
10CFR50.73 (a)(2)(iv)(A)

Answer: B. 4 hour report. LER is required within 60 days. **10CFR50.72(b)(2)(iv)(A):** 4-hour report is required if any event that results or should have resulted in ECCS discharge into the reactor coolant system (**HPCS injected into the reactor vessel**) as a result of a valid signal except when the actuation results from and is part of a pre-planned evolution during testing of reactor operation (**not pre-planned**). **10CFR50.72(b)(3)(IV)(A):** 8-hour report is required if any event or condition that results in valid actuation of any of the systems listed in paragraph (b)(3)(iv)(B), except when the actuation results from and is part of a pre-planned evolution during testing of reactor operation. EXCEPT when reported under paragraphs (a), (b)(1), or (b)(2), the licensee shall notify the NRC as soon as possible and in all cases within 8 hours of the occurrence. **Because a 4-hour report is required the 8-hour report is not required. 4-hour report because there was injection into the reactor vessel.** **RPS Actuation is part of a preplanned sequence (shutdown by scram reactor mode switch to shutdown, & low level scram signal is**

expected during this event) and not reportable.
10CFR50.73(b)(3)(IV)(A): LER is required if any condition or that resulted in manual or automatic actuation (**automatic actuation occurred**) of any of the systems listed in paragraph (2)(iv)(B) (**HPCS is included**) EXCEPT when:
The actuation resulted from and was part of a pre-planned sequence during testing or reactor operation (**not pre-planned**), OR .
The actuation was invalid (**it was invalid**) AND occurred while the system was properly removed from service (**system was in standby**) OR occurred after the safety function had been already completed (**system was in standby**).

Distractor: A. LER is required.

Distractor: C. 4-hour report because injection occurred into the reactor vessel. LER is required.

Distractor: D. 4-hour report because injection occurred into the reactor vessel.

References Provided: 10CFR50.72, 10CFR50.73

10CFR 55.43(b)(5) Note: Selection of correct procedure is implied rather than stated. To select the correct answer, the appropriate procedure or knowledge of that procedure was required.

Question 11 Cross References (table item links)

10CFR55
- 43(b)(5)

CFR
- 10CFR50.72 Rev. NA
- 10CFR50.73 Rev. NA

Cognitive Level
- 3

NUREG 1123 KA Catalog Rev. 2
- G2.4.30 2.2/3.6 Knowledge of which events related to system operations/status should be reported to outside agencies

Level of Difficulty
- Level 3: Higher order Knowledge item

LP
- O3-OPS-008-361-3-02, Rev. NA

Question Source
- New

Question Setting
- C1 (License class closed reference)

12 **SYSID: 22918** **Points: 1.00**

With the plant at 100% power, with the following:

- Both RPM-EPAs 2RPM*ACB1B and 2RPM*ACB2B tripped
- 2RPM-MG1B is not running
- N2-SOP-97 is entered
- Power source selector switch is swapped from NORM to ALT
- When performing the actions for resetting of RPM-EPAs, the operator is required to manually defeat the overvoltage protective function for 2RPM*ACB1B and 2RPM*ACB2B because the voltage on the bus is above the overvoltage reset value
- 2RPM*ACB1B and 2RPM*ACB2B are reset and closed

Which one of the following is the correct COMPLETION TIME to restore at least one of the EPA breakers to operable?

A. 1 hour COMPLETION TIME because a scram logic bus is inoperable

B. 1 hour COMPLETION TIME because a scram solenoid bus is inoperable

C. 72 hour COMPLETION TIME because a scram logic bus is inoperable

D. 72 hour COMPLETION TIME because a scram solenoid bus is inoperable

Answer: B

Associated objective(s):

LC2 03-01 NRC EXAM DEVELOPMENT AREA

Question 12 Details

Question Type:	Multiple Choice
Topic:	NRC SRO 12
System ID:	22918
User ID:	
Status:	Active
Must Appear:	No
Difficulty:	0.00
Time to Complete:	0
Point Value:	1.00
Cross Reference:	LC2 03-01
User Text:	
User Number 1:	0.00
User Number 2:	0.00
Comment:	O2-OPS-001-212-2-00 EO-1.11

N2-SOP-97, 5.6
TS 3.3.8.3 LCO Statement and associated bases

Answer: B. Per SOP-97, 5.6, RPS Scram Solenoids - Alternate Power: When using alternate power to supply the RPS Scram solenoids, bus voltage may be too high to reset the overvoltage trip relay on 2RPM*ACB1A(B) OR 2RPM*ACB2A(B). If any tripped EPA breaker cannot be reset and turned ON due to voltage on the bus exceeding the reset value, shift supervision shall determine which of the following methods is best, considering present plant conditions, to facilitate resetting the affected breaker(s):

- Manually defeat the overvoltage protective function at the breaker(s) UNTIL load on the bus is re-established by resetting the half scram (Preferred method). **This will require entry into TS 3.3.8.3, Condition A, with one EPA breaker defeated on one bus (72 hour completion time) OR Condition B, with both EPA breakers defeated on one bus (1 hour completion time).** TS 3.3.1.1 also applies with a 1 hour completion time.

OR

- Lower bus voltage by adjusting the load tap changer for the transformer supplying

Distractor: A. TS 3.3.8.3 not TS 3.3.8.2 because the RPS MG set powers the scram solenoids not the logic. The logic is powered from UPS.

Distractor: C. TS 3.3.8.3 not TS 3.3.8.2 because the RPS MG set powers the scram solenoids not the logic. The logic is powered from UPS. Only 1 hour is permitted to restore one of the two RPM-EPAs to operable. When TS 3.3.8.3 is entered both Condition A and Condition B are entered. With one of the two EPAs operable within 1 hour, Condition B is exited and Condition A is continued permitting 72 hours from the time Condition A was entered to restore the other EPA to operable status. If only one is inoperable, then 72 hours are permitted.

Distractor: D. This is the correct TS but the incorrect time. Only 1 hour is permitted to restore one of the two RPM-EPAs to operable. When TS 3.3.8.3 is entered both Condition A and Condition B are entered. With one of the two EPAs operable within 1 hour, Condition B is exited and Condition A is continued permitting 72 hours from the time Condition A was entered to restore the other EPA to operable status. If only one is inoperable, then 72 hours are permitted.

References Provided: Tech Spec 3.3.8.2 and 3.3.8.3

10CFR 55.43(b)(5) Note: Selection of correct procedure is implied rather than stated. To select the correct answer, the appropriate procedure or knowledge of that procedure was required.

Question 12 Cross References (table item links)

10CFR55
- 43(b)(2)
- 43(b)(5)

Cognitive Level
- 2

NUREG 1123 KA Catalog Rev. 2
- G2.2.22 3.4/4.1; Knowledge of limiting conditions for operations and safety limits
- 212000 Reactor Protection System, Rev. NA

Level of Difficulty
- Level 3: Higher order Knowledge item

LP
- O2-OPS-001-212-2-00 Rev. na

Question Source
- New

PROC
- N2-OP-97 Rev. NA

TECHSPEC
- T.S.3.3.8.3 Rev. NA

Question Setting
- C1 (License class closed reference)

13 **SYSID: 22919** **Points: 1.00**

Core shuffle in progress, with the following:

- The **next step** requires movement of the fuel assembly at core location 25-24 to core location 55-34
- Before latching the **next step**, SRM A and SRM C are declared inoperable

Which one of the following describes which SRM must be restored to OPERABLE status and why?

A. SRM A because it is in the quadrant from which the fuel is removed.

B. SRM C because it is in the quadrant into which the fuel is being moved..

C. SRM A because it is in a quadrant into which the fuel is being moved.

D. SRM C because it is in a quadrant adjacent to a fuel move quadrant.

Answer: D

Associated objective(s):

LC2 03-01 NRC EXAM DEVELOPMENT AREA

Question 13 Details

Question Type:	Multiple Choice
Topic:	NRC SRO 13
System ID:	22919
User ID:	
Status:	Active
Must Appear:	No
Difficulty:	0.00
Time to Complete:	0
Point Value:	1.00
Cross Reference:	LC2 03-01
User Text:	
User Number 1:	0.00
User Number 2:	0.00
Comment:	O2-OPS-001-215-2-03 EO-1.11

TS TABLE 3.3.1.2-1, SR 3.3.1.2.2

Answer:	D. is correct because 3 SRM's must be OPERABLE to complete this particular fuel move. SRM D is in the quadrant form which the bundle will be removed. SRM B is int he quadrant to which the bundle will be moved. SRM A or C are adjacent to either of the above quadrant.
Distractor:	A. is incorrect because SRM A is in the adjacent quadrant.
Distractor:	B. is incorrect because SRM C is in the adjacent quadrant.
Distractor:	C. is incorrect because SRM A is in the adjacent quadrant.

References Provided: Core Map

Question 13 Cross References (table item links)

10CFR55
- 43(b)(2)
- 43(b)(6)
- 43(b)(7)

Cognitive Level
- 3

NUREG 1123 KA Catalog Rev. 2
- 215004 A2.02 3.4/3.7, Ability to (a) predict the impacts of the following on the SOURCE RANGE MONITOR (SRM) SYSTEM: and (b) based on the consequences of those abnormal conditions or operations: SRM inop condition

Level of Difficulty
- Level 3: Higher order Knowledge item

LP
- O2-OPS-001-215-2-03, Rev. NA

Question Source
- New

TECHSPEC
- T.S.3.3.1.2 Rev. NA

Question Setting
- C1 (License class closed reference)

14 **SYSID: 22920** **Points: 1.00**

The plant is operating at 100% power, with the following:

- I&C is ready to perform N2-ISP-MSS-Q003, Quarterly Functional Test and Trip Unit Calibration of Main Steam Line Low Pressure Instrument Channels. This test performs channel calibration of the Rosemount Analog Trip System Master Trip Units (MTU) for Main Steam Line Low Pressure Instrument Channels 2MSS*PIS1020A-D (B22-N676A-D)
- 2MSS*PIS1020A MTU Trip calibration starts AT 0800

Which one of the following describes the correct implementation and basis for entry into the associated CONDITION and REQUIRED ACTION of Tech Specs?

A. Entry must be logged as of 0800 because associated function does not maintain isolation capability.

B. Entry must be logged as of 0800 because Safety Function Determination Program requirements are not met.

C. Entry may be delayed until 1400 because associated function maintains isolation capability.

D. Entry may be delayed until 1400 because separate entries are allowed for each channel to be tested.

Answer: C

Associated objective(s):

LC2 03-01 NRC EXAM DEVELOPMENT AREA

Question 14 Details

Question Type:	Multiple Choice
Topic:	NRC SRO 14
System ID:	22920
User ID:	
Status:	Active
Must Appear:	No
Difficulty:	0.00
Time to Complete:	0
Point Value:	1.00
Cross Reference:	LC2 03-01
User Text:	
User Number 1:	0.00
User Number 2:	0.00
Comment:	O2-OPS-001-223-2-02 EO-1.11

T.S. 3.3.6.1, Surveillance requirements Note 2
N2-ISP-MSS-Q003 ATT. 1, STEP 7.1.1, Plant Impact #2

Answer: C. At 0800 when the channel calibration begins, the channel is inoperable. Per TS 3.3.6.1 Surveillance Requirement note, *"When a channel is placed in an inoperable status solely for the performance of required surveillances, entry into associated Conditions and Required Actions may be delayed for up to 6 hours provided the associated Function maintains isolation capability."*

Distractor: A. Incorrect. Entry into the CONDITION and REQUIRED ACTION is not required at 0800 because the associated function maintains isolation capability with three remaining instruments.

Distractor: B. Incorrect. Entry into the CONDITION and REQUIRED ACTION is not required at 0800. Safety Function Determination Program requirements ARE met, which allows the station to rely on the surveillance requirement NOTE allowing the 6 hours delayed entry.

Distractor: D. Incorrect. Although a note does state that separate entries are allowed for each channel, this is not the reason for allowing the 6 hour delay for surveillance testing.

References Provided: None

10CFR 55.43(b)(5) Note: Selection of correct

procedure is implied rather than stated. To select the correct answer, the appropriate procedure or knowledge of that procedure was required.

Question 14 Cross References (table item links)

10CFR55

- 43(b)(2)
- 43(b)(5)

Cognitive Level

- 3

NUREG 1123 KA Catalog Rev. 2

- 223002 A2.08 2.7/3.1; Ability to (a) predict the impacts of the following the PRIMARY CONTAINMENT ISOLATION SYSTEM/NUCLEAR STEAM SUPPLY SHUT-OFF; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Surveillance testing

Level of Difficulty

- Level 3: Higher order Knowledge item

LP

- O2-OPS-001-223-2-02 Rev. na

Question Source

- New

Question Setting

- C1 (License class closed reference)

15 **SYSID: 22921** **Points: 1.00**

The plant is operating at 100% power, with the following:

- Power Control provides notification of unstable grid conditions with imminent loss of off site power

Which one of the following actions is required?

A. Per SOP-3, immediately scram the reactor and enter SOP-101C.

B. Per SOP-70, immediately scram the reactor and enter SOP-101C.

C. Per SOP-3, start and run Div 1 and Div 2 Diesel Generators loaded.

D. Per SOP-70, start and run Div 1 and Div 2 Diesel Generators unloaded.

Answer: D

Associated objective(s):

LC2 03-01 NRC EXAM DEVELOPMENT AREA

Question 15 Details

Question Type:	Multiple Choice
Topic:	NRC SRO 15
System ID:	22921
User ID:	
Status:	Active
Must Appear:	No
Difficulty:	0.00
Time to Complete:	0
Point Value:	1.00
Cross Reference:	LC2 03-01
User Text:	
User Number 1:	0.00
User Number 2:	0.00
Comment:	O2-OPS-006-SOP-2-30 EO-30.1

Answer: D. Per N2-SOP-70, if LOOP is imminent:

IF	THEN
Loss of off-site power is imminent,	Start the Div I AND II Diesels per N2-OP-100A AND run them unloaded
A partial OR full LOOP occurs,	Enter N2-SOP-03

CAUTION:
Operating an EDG in parallel with off-site power while unstable grid conditions exist can result in the loss of the EDG and the bus during a grid transient

Distractor: A. SOP-3 is not entered based on this information. Only SOP-70 is entered. If Line 5 or Line 6 is lost, or both line 5 and line 6 are lost, then SOP-3 is entered assuming either the Div 1 DG or the Div 2 DG start and load. After SOP-3 is entered, certain electrical power lineups support taking the actions for degraded SW which include a reactor scram.

Enter SOP-11, Loss of SWP:

Scram the reactor per SOP-101C

Trip the following:

- Main Turbine
- Recirc pumps
- WCS pumps

Distractor: B. Only SOP-70 is entered at this time. There are no conditions/actions within SOP-70 that warrant inserting a manual reactor scram.

Distractor: C. The direction to start the Div 1 DG and the Div 2 DG UNLOADED is in

SOP-70, not SOP-3. SOP-3 provides direction to start DGs but this is to start and load DGs based upon busses which are not powered.

References Provided: None

Question 15 Cross References (table item links)

10CFR55
- 43(b)(5)

Cognitive Level
- 1

NUREG 1123 KA Catalog Rev. 2
- 262001 A2.11 3.2/3.6; Ability to (a) predict the impacts of the following on the A.C. ELECTRICAL DISTRIBUTION; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Degraded system voltages

Level of Difficulty
- Level 2: System operation and response

LP
- O2-OPS-006-SOP-2-30, Rev. NA

Question Source
- New

PROC
- S-ODP-OPS-0112 Rev. NA
- N2-SOP-70, Rev. NA

Question Setting
- C1 (License class closed reference)

16 **SYSID: 22922** **Points: 1.00**

Upon completion of a 400-day run and shutdown for a refueling outage, control rod withdrawal using control rod sequence A2UP for has been commenced the subsequent startup. Control rods in RWM Step 1 are being withdrawn.

- The last control rod movement was withdrawing control rod 50-15 to position 48
- RO selects control rod 10-15 and the following are observed:
  - ➢ Select Error and WITHDRAW rod block are indicated on the RWM display.
  - ➢ WITHDRAW BLOCK status light is ON (Rod Select Module).

Which one of the following is the correct action in response to the above conditions?

A. Bypass the RWM and continue control rod withdrawal. Additional staff is not required to be stationed.

B. Bypass the RWM and station an additional RO or SRO to verify control rod movements before continuing control rod withdrawal.

C. Fully insert the withdrawn control rods in reverse order using RMCS. Continue the startup after repairing the RWM hardware failure.

D. Fully insert the withdrawn control rods by a manual reactor scram. Continue the startup after correcting the RWM BPWS error.

Answer: B

Associated objective(s):

LC2 03-01 NRC EXAM DEVELOPMENT AREA

Question 16 Details

Question Type:	Multiple Choice
Topic:	NRC SRO 16
System ID:	22922
User ID:	
Status:	Active
Must Appear:	No
Difficulty:	0.00
Time to Complete:	0
Point Value:	1.00
Cross Reference:	LC2 03-01
User Text:	
User Number 1:	0.00
User Number 2:	0.00
Comment:	O2-OPS-001-201-2-02 EO-1.11

N2-OP-95A, Rev. 4, Section H.1.0
N2-OPS-RMC-Q@003, Section 8.1
Tech Spec: 3.3.2.1 (including Table 3.3.2.1-1)
A2 Startup Control Rod Sequence

Answer: B. The RWM is inoperable. Although the control rod selected is the next control rod in the control rod sequence and is a control rod within this RWM step (group of control rods), the RWM has incorrectly restricted movement of this control rod. Since the RWM was functioning correctly, the supposed error is that the control rod sequence package is not loaded correctly into the RWM. Therefore, the RWM recognizes the selection and attempted control rod withdrawal as an out-of-sequence rod movement and enforces a Select Error and Rod Block.
This requires declaring SR 3.2.2.1.8 not met and the RWM inoperable.
With the RWM inoperable, suspend control rod movement except by scram EXCEPT if the following can be satisfied: Determining that more than 12 control rods are withdrawn per TS 3.3.2.1, RA C.2.1.1 (12 rods are not withdrawn) OR that no startups with the RWM inoperable have occurred in the last year per TS 3.3.2.1, RA C.2.1.2 (met since 400 day run and then shutdown for a refueling outage), control rod withdrawal can be continued by bypassing the RWM after completing TS 3.3.2.1 RA C.2.2. Since N2-OP-95A, Section H.1.0 requires

additional personnel in the control room for the startup be assigned specifically for verification of control rod movements, TS 3.3.2.1 RA C.2.2 is met.

Sequence A2, RSCS Group 1 / RWM Step 1: Control rods in this group are withdrawn in the following sequence; 02-39, 58-39, 58-23, 02-23, 18-55, 42-55, 42-07, 18-07, 10-47, 50-47, 50-15, 10-15. Control rod 10-15 is the 12th control rod.

Distractor: A. Since the operating procedure requires additional personnel in the control room for the failure of the RWM, TS requirement for independent verification of control rod movement is required.

Distractor: C. If a startup with the RWM inoperable was conducted within the past calendar year, then the correct response is to insert the control rods. The correct method for inserting control rods if required would be in reverse order and not by scram. The wording in TS 3.3.2.1 RA C.1, suspend control rod movement except by scram, can lead one to believe a scram is required if the RWM is inoperable and the required actions to continue the startup cannot be met. However, this is not the case since it has been 400 days plus a refueling outage since the last startup. This is the other option to be considered since at least 12 control rods have not been withdrawn.

Distractor: D. If a startup with the RWM inoperable was conducted within the past calendar year, then the correct response is to insert the control rods. The correct method for inserting control rods if required would be in reverse order and not by scram. The wording in TS 3.3.2.1 RA C.1, suspend control rod movement except by scram, can lead one to believe a scram is required if the RWM is inoperable and the required actions to continue the startup cannot be met. However, this is not the case since it has been 400 days plus a refueling outage since the last startup. This is the other option to be considered since at least 12 control rods have not been withdrawn.

Predict Impact is not specifically asked for, but candidates must understand the impact in order to select and determine the appropriate procedure actions to be taken to mitigate the results of the malfunctioning RWM.

References Provided: TS 3.3.2.1 (including Table 3.3.2.1-1), Rod Movement Sheets for the first twelve rods of sequence A2UP.

Question 16 Cross References (table item links)

10CFR55
- 43(b)(2)

Cognitive Level
- 3

NUREG 1123 KA Catalog Rev. 2
- 201006 A2.05 3.1/3.5, Ability to (a) predict the impacts of the following on this ROD WORTH MINIMIZER SYSTEM; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Out of sequence rod movement; P-Spec(Not-BWR6)

Level of Difficulty
- Level 3: Higher order Knowledge item

LP
- O2-OPS-001-201-2-02 Rev. na

Question Source
- New

PROC
- N2-OP-95A Rev. NA
- N2-OSP-RMC-Q@003 Rev. NA

TECHSPEC
- T.S.3.3.2.1 Rev. NA

Question Setting
- C1 (License class closed reference)

17 **SYSID: 22923** **Points: 1.00**

During the performance of the N2-ISP-ISC-Q002,CHANNEL CALIBRATION, for the Reactor Vessel Water Level Low Level 3 function of Reactor Protection System, the as-found and as-left values for instrument 2ISC*LIS1680C are reported by I&C:

- As-found 157.70 inches
- As-left 159.49 inches

Which one of the following describes the operability of this instrument upon learning the as-found value and after completing the calibration and an instrument drift evaluation?

A. Upon learning the as-found value the channel was **inoperable**. After calibration the channel became operable.

B. Upon learning the as-found value the channel was **inoperable**. After calibration the channel remained **inoperable**.

C. Upon learning the as-found value the channel remained operable. After calibration the channel remained operable.

D. Upon learning the as-found value the channel remained operable. After calibration the channel became **inoperable**.

Answer: A

Associated objective(s):

LC2 03-01 NRC EXAM DEVELOPMENT AREA

Question 17 Details

Question Type:	Multiple Choice
Topic:	NRC SRO 17
System ID:	22923
User ID:	
Status:	Active
Must Appear:	No
Difficulty:	0.00
Time to Complete:	0
Point Value:	1.00
Cross Reference:	LC2 03-01
User Text:	
User Number 1:	0.00
User Number 2:	0.00
Comment:	O2-OPS-001-216-2-01 EO-1.11

TS 3.3.1.1 Table 3.3.1.1, function 4
TS Bases 3.3.1.1, Background Discussion
ARP 603105
N2-ISP-ISC-Q002

Answer: A . Per TS Table 3.3.1.1-1, Function 4, the allowable value is ^{3}157.8 inches. Per ARP 603105, 2ISC*LIS1680C trip set point is 159.3 inches.
Because the as-found value (157.70 inches) is not within the allowable value, the instrument must be declared inoperable. After the calibration is complete, the as-left value (159.49 inches) is within the allowable value and is considered operable. The as-left value is also more conservative than the trip set-point justifying this instrument being restored to operable status.
Per the TS bases for RPS Instrumentation, upon learning the allowable value is exceeded, the instrument is inoperable. Provided the instrument as-found value is below the allowable value it is operable even though it may be above the specified trip set point. Provided the as-left value is below the allowable value it is returned to operable status.

Distractor: B. Became operable when it was calibrated to below the allowable value.

Distractor: C. When the allowable value is exceeded, the instrument is inoperable.

Distractor: D. When the allowable value is exceeded, the instrument is inoperable. Became operable when it was calibrated to below the allowable value.

References Provided: TS 3.3.1.1 (all, no bases)

Question 17 Cross References (table item links)

10CFR55

- 43(b)(2)

Cognitive Level

- 2

NUREG 1123 KA Catalog Rev. 2

- G2.2.25 2.5/3.7 Knowledge of bases in technical specifications for limiting conditions for operations and safety limits
- 216000 Nuclear Boiler Instrumentation, Rev. NA

Level of Difficulty

- Level 3: Higher order Knowledge item

LP

- O2-OPS-001-216-2-01 Rev. na

Question Source

- New

PROC

- N2-ARP-01 Rev. NA
- N2-ISP-ISC-Q002 Rev. NA

TECHSPEC

- T.S.3.3.1.1 Rev. NA

Question Setting

- C1 (License class closed reference)

18 **SYSID: 22924** **Points: 1.00**

The plant is preparing for refueling, with the following:

- The first fuel shuffle is scheduled to start as soon as N2-OSP-RMC-W@002, Reactor Mode Switch Functional Test of Refuel Interlocks, is complete (in about 4 hours).
- Following the first fuel shuffle, the in-vessel servicing window includes the replacement of 10 control rod blades
- Maintenance informs you the monorail hoist load cell on the refueling bridge must be replaced
- The estimated time to replace and calibrate the load cell is 12 hours

Which one of the following is the impact of the monorail hoist load cell problem and the correct action based upon this impact?

A. Starting the first fuel shuffle must be delayed. Although this load cell does not support testing of the other hoist interlocks, this load cell must be operable prior to starting fuel movement.

B. Starting the first fuel shuffle must be delayed. Place the surveillance on hold until this load cell is operable and can be used to support testing of the frame-mounted and main hoist interlock checks.

C. The first fuel shuffle can start at the scheduled time by deferring (NA) the monorail hoist checks. The monorail hoist should be tested at a later time to support fuel support removal for control rod blade change out during the in-vessel servicing.

D. The first fuel shuffle can start at the scheduled time by deferring (NA) the monorail hoist checks. The monorail hoist should be tested at a later time to support double blade guide movement for control rod blade change out during the in-vessel servicing.

Answer: C

Associated objective(s):

LC2 03-01 NRC EXAM DEVELOPMENT AREA

Question 18 Details

Question Type:	Multiple Choice
Topic:	NRC SRO 18
System ID:	22924
User ID:	
Status:	Active
Must Appear:	No
Difficulty:	0.00
Time to Complete:	0
Point Value:	1.00
Cross Reference:	LC2 03-01
User Text:	
User Number 1:	0.00
User Number 2:	0.00
Comment:	O2-OPS-001-234-2-01 EO-1.4

N2-OSP-RMC-W@002, 8.5, 10.1.4, N2-FHP-021

Answer: C. Refueling interlock checks are only necessary for the equipment used during the actual fuel movements, which include the refueling bridge/trolley and main hoist and the associated support systems such as air. The monorail hoist is not used to move nuclear fuel and does not have to be tested. The monorail hoist and/or frame-mounted hoist are used to remove and install control rod blades, not the main hoist, therefore the monorail hoist should be operable from those activities. Since the cells containing the control rod blades to be changed out will have no fuel, movement of these control rods is not considered a core alteration, however, it is prudent to ensure that equipment being used (i.e., the monorail hoist, frame-mounted) is tested properly prior to its use. If the load cell was not operable, any control rod blade restrictions to its removal (i.e. snagged) would not be noticed and interrupted (Hoist Jam) with an inoperable load cell and could result in equipment damage and/or personnel injury. The process for control rod blade change out includes using the monorail hoist to remove the Fuel Support Piece, the Frame-mounted hoist to remove the old control rod blade and then insert the new control rod blade, and then the Fuel Support

Piece is reinserted into that location using the monorail hoist.

Distractor: A. The fuel shuffle does not have to be delayed. The monorail hoist check can be deferred (N/A) and tested at a later time before activities are performed requiring its use. The monorail hoist is not used to move nuclear fuel, the main hoist is.

Distractor: B. The fuel shuffle does not have to be delayed. The monorail hoist check can be deferred (N/A) and tested at a later time before activities are performed requiring its use. The monorail hoist load cell is only used on the monorail hoist. The main hoist and frame mounted hoist each have their own load cell systems. The monorail hoist is not used to move nuclear fuel, the main hoist is.

Distractor: D. The main hoist is used to move double blade guides, not the monorail hoist.

References Provided: None

Question 18 Cross References (table item links)

10CFR55
- 43(b)(6)
- 43(b)(7)

Cognitive Level
- 2

NUREG 1123 KA Catalog Rev. 2
- 234000 A2.01 3.3/3.7; Ability to (a) predict the impacts of the following on the FUEL HANDLING EQUIPMENT; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Interlock failure

Level of Difficulty
- Level 3: Higher order Knowledge item

LP
- O2-OPS-001-234-2-01 Rev. na

Question Source
- New

PROC
- N2-OSP-RMC-W@002 Rev. NA
- N2-FHP-021, Rev. NA

Question Setting
- C1 (License class closed reference)

19 **SYSID: 22925** **Points: 1.00**

The plant is operating at 100% power, with the following:

00:00 on May 1: SGT A and SGT B are declared inoperable
00:55 on May 1: Recirc flow is lowered for a plant shutdown
08:00 on May 1: Reactor mode switch placed to shutdown
09:00 on May 2: Average RCS temperature is lowered to 199°F

Which one of the following is the implication of the above actions?

A. The power reduction was NOT initiated within the specified time.

B. The plant was NOT placed in Mode 2 within the specified time.

C. The plant was NOT placed in Mode 3 within the specified time.

D. The plant was NOT placed in Mode 4 within the specified time.

Answer: B

Associated objective(s):

LC2 03-01 NRC EXAM DEVELOPMENT AREA

Question 19 Details

Question Type:	Multiple Choice
Topic:	NRC SRO 19
System ID:	22925
User ID:	
Status:	Active
Must Appear:	No
Difficulty:	0.00
Time to Complete:	0
Point Value:	1.00
Cross Reference:	LC2 03-01
User Text:	
User Number 1:	0.00
User Number 2:	0.00
Comment:	O2-OPS-001-261-2-01 EO-1.11

Answer: B. The plant was not placed in Mode 2 within the specified time.
With both SGT trains inoperable, TS LCO 3.0.3 applies.
Per TS LCO 3.0.3:

LCO 3.0.3 When an LCO is not met and the associated ACTIONS are not met, an associated ACTION is not provided, or if directed by the associated ACTIONS, the unit shall be placed in a MODE or other specified condition in which the LCO is not applicable. Action shall be initiated within 1 hour to place the unit, as applicable, in:

a. MODE 2 within 7 hours;

b. MODE 3 within 13 hours; and

c. MODE 4 within 37 hours.

Exceptions to this Specification are stated in the individual Specifications.

Where corrective measures are completed that permit operation in accordance with the LCO or ACTIONS, completion of the actions required by LCO 3.0.3 is not required.

LCO 3.0.3 is only applicable in MODES 1, 2, and 3.

Distractor: A. For the conditions specified, negative reactivity is inserted when recirc flow is lowered 55 minutes after entering LCO 3.0.3, therefore, the power reduction was initiated within the specified time. If the candidate incorrectly determines that the action to "be in MODE 3" with a completion time of 12 hours is required rather than LCO 3.0.3, they could determine the power reduction is required to be immediate rather than within 1 hour, which is not the case.

Distractor: C. TS LCO 3.0.3 allows 13 hours to be in MODE 3 (1 hour to prepare for and initiate the shutdown and 12 hours to proceed to MODE 3). Until the reactor mode switch is placed to shutdown, the plant is in MODE 1. Once the reactor mode switch is placed to shutdown, the plant is in MODE 3. Because the reactor mode switch was placed in shutdown at 08:00, the requirement to be in MODE 3 within 13 hours is satisfied.

Distractor: D. TS LCO 3.0.3 allows 37 hours to be in MODE 4 (1 hour to prepare for and initiate the shutdown, 12 hours to proceed to MODE 3 which is a total of 13 hours so far, and then an additional 24 hours to be in MODE 4 for a total of 37 hours). Once the reactor mode switch is placed to shutdown, the plant is in MODE 3. Once the average RCS temperature is below 200°F, the plant is in MODE 4. For the conditions specified the plant is in MODE 4 within 33 hours of entering LCO 3.0.3. This answer is plausible for two reasons: if the candidate confuses the TS shutdown actions (be in MODE 3 with a completion time of 12 hours, and be in MODE 4 with a completion time of 24 hours) they could incorrectly determine that MODE 4 should have been reached within 24 hours of entering LCO 3.0.3, or they could incorrectly determine that the plant was not in MODE 4 within 24 hours of placing the plant in MODE 3, which is also incorrect. You get the entire 37 hours to be in MODE 4 regardless how soon MODE 3 was achieved.

References Provided: T.S. 3.6.4.3

Question 19 Cross References (table item links)

10CFR55
- 43(b)(2)

Cognitive Level
- 3

NUREG 1123 KA Catalog Rev. 2
- G2.1.11 3/3.8 Knowledge of less than one hour technical specification action statements for systems

Level of Difficulty
- Level 2: System operation and response

LP
- O2-OPS-001-261-2-01, Rev. NA

Question Source
- New

TECHSPEC
- 3.6.4.3, Rev. NA
- TS LCO 3.0.3, Rev. NA
- TS LCO 3.0.3 BASES, Rev. NA

Question Setting
- C1 (License class closed reference)

20 **SYSID: 22926** **Points: 1.00**

The plant is operating at 100% with the following:

09:00 on May 1: Per TRSR 3.4.1.3 the last satisfactory channel check for Reactor water continuous conductivity recorders and conductivity was 0.8 umho/cm
09:00 on May 4: Per TRSR 3.4.1.3 RCS A Loop & WCS filter continuous conductivity recorders are declared inoperable
12:00 on May 4: Conductivity measurement reported at 1.02 umhos/cm at 25°C

SRO determines entry into TRM 3.4.1 CONDITION B is required prior to 12:00 on May 5 because Required Action A.2 cannot be completed

Which one of the following describes the SRO determination regarding the TLCO?

A. SRO correctly applied the TLCO. CONDITION B applies to REQUIRED ACTIONS A.1, A.2 and A.3. COMPLETION TIME for ACTION A.2 is not met.

B. SRO incorrectly applied the TLCO. Application of TRSR 3.0.2 allows an extension of CONDITION A.2 COMPLETION TIME to 30 hours prior to entering CONDITION B.

C. SRO incorrectly applied the TLCO. CONDITION B only applies to REQUIRED ACTION A.3. REQUIRED ACTION A.2 is addressed by TRSR 3.4.1.1.

D. SRO incorrectly applied the TLCO. CONDITION B should be entered at 12:00 on May 4 because TRSR 3.4.1.3 cannot be performed.

Answer: C

Associated objective(s):

LC2 03-01 NRC EXAM DEVELOPMENT AREA

Question 20 Details

Question Type:	Multiple Choice
Topic:	NRC SRO 20
System ID:	22926
User ID:	
Status:	Active
Must Appear:	No
Difficulty:	0.00
Time to Complete:	0
Point Value:	1.00
Cross Reference:	LC2 03-01
User Text:	
User Number 1:	0.00
User Number 2:	0.00
Comment:	O2-OPS-008-362-2-03 EO-1.3

TRM: T3.4.1
TRM TABLE T3.4.1-1
TRM TRSR 3.0.1

Answer: C. is right. Condition B of TLCO 3.4.1 applies only if the required actions and associated completion times **<u>of A.3 are not met</u>**. If there is a problem with the continuous conductivity recorder TRSR 3.4.1.1 takes affect.

Distractor: A and D are wrong because CONDITION B only applies to A.3.

Distractor: B. is wrong because CONDITION B does not apply if A.2 is not done and TRSR 3.0.2 is irrelevant in this situation.

References Provided: TRM: T3.4.1 and TRM Table T3.4.1-1

Question 20 Cross References (table item links)

10CFR55
- 43(b)(2)

Cognitive Level
- 3

NUREG 1123 KA Catalog Rev. 2
- G2.1.34 2.3/2.9 Ability to maintain primary and secondary plant chemistry within allowable limits

Level of Difficulty
- Level 3: Higher order Knowledge item

LP
- O2-OPS-008-362-2-03, Rev. NA

Question Source
- New

TECHSPEC
- TRM 3.4.1 Rev. NA
- TRM Table T3.4.1-1, Rev. NA
- TRM TRSR 3.0.1, Rev. NA

Question Setting
- C1 (License class closed reference)

21 **SYSID: 22927** **Points: 1.00**

The plant is operating at 100% power, with the following:

- A single Division I Drywell Pressure ECCS initiation instrument fails downscale requiring corrective maintenance
- The SM declares the Division I Drywell Pressure instrument inoperable

Which one of the following describes the ACTIONS required by Technical Specifications?

A. Declare CSL and A RHS subsystems inoperable immediately and trip the High Drywell pressure channel with a COMPLETION TIME of 24 hours.

B. Declare CSL and A RHS subsystems inoperable within 1 hour and trip the High Drywell pressure channel with a COMPLETION TIME of 24 hours.

C. CSL and A RHS subsystems remain OPERABLE and trip the High Drywell pressure channel with a COMPLETION TIME of 12 hours.

D. Declare CSL and A RHS subsystems inoperable immediately and trip the High Drywell pressure channel with a COMPLETION TIME of 12 hours.

Answer: A

Associated objective(s):

LC2 03-01 NRC EXAM DEVELOPMENT AREA

Question 21 Details

Question Type:	Multiple Choice
Topic:	NRC SRO 21
System ID:	22927
User ID:	
Status:	Active
Must Appear:	No
Difficulty:	0.00
Time to Complete:	0
Point Value:	1.00
Cross Reference:	LC2 03-01
User Text:	
User Number 1:	0.00
User Number 2:	0.00
Comment:	O2-OPS-008-362-2-02

GAP-PSH-03; 3.9, 3.9.2
Tech Spec 3.3.5.1, 3.5.1

Answer: **A**. is correct because the definition of OPERABILITY requires all support instrumentation to be OPERABLE. Therefore CSL and A RHR are both declared inoperable. The completion time of 24 hour applies to 1.c. in Tech Spec 3.3.5.1.

Distractor: **B**: is incorrect because the trip function has not been lost.

Distractor: **C**: is incorrect because CSL and A RHR do not meet the definition of OPERABLE. Also the completion time for channel trip is 24 hours.

Distractor: **D**: is incorrect because the completion time is 24 hours.

References Provided: Tech Spec 3.3.5.1 and 3.5.1

Question 21 Cross References (table item links)

10CFR55
- 43(b)(2)

Cognitive Level
- 2

NUREG 1123 KA Catalog Rev. 2
- G2.2.24 2.6/3.8 Ability to analyze the affect of maintenance activities on LCO status

Level of Difficulty
- Level 3: Higher order Knowledge item

LP
- O2-OPS-008-362-2-02, Rev. NA

Question Source
- New

PROC
- GAP-PSH-03, Rev. NA

TECHSPEC
- 3.3.5.1 Rev. NA
- 3.5.1 Rev. NA

Question Setting
- C1 (License class closed reference)

22 **SYSID: 22928** **Points: 1.00**

A core shuffle is in progress. Which one of the following conditions meets the Fuel Handling Procedure (FHP) criteria for stopping fuel movement?

A. Last performance of the Refueling Platform Interlocks Test was completed forty-eight (48) hours ago.

B. A fuel assembly is lowered four (4) feet into a core location when it is recognized that this is the incorrect location.

C. The fuel assembly nose piece is lowered to two (2) feet above the core top guide before establishing the correct orientation.

D. A fuel assembly is moved to the spent fuel pool and the rod block interlock light clears when the bridge is clear of the reactor core.

Answer: B

Associated objective(s):

LC2 03-01 NRC EXAM DEVELOPMENT AREA

Question 22 Details

Question Type:	Multiple Choice
Topic:	NRC SRO 22
System ID:	22928
User ID:	
Status:	Active
Must Appear:	No
Difficulty:	0.00
Time to Complete:	0
Point Value:	1.00
Cross Reference:	LC2 03-01
User Text:	
User Number 1:	0.00
User Number 2:	0.00
Comment:	O2-OPS-001-234-2-01 EO-1.7

N2-FHP-13.3

Answer:	B. FUEL LOADING ERROR: The placement of a fuel assembly in the core in a location other than that specified by the fuel movement instructions. This includes partial insertion of a fuel assembly into the reactor core. Per FHP 13.3 Attachments 5, criteria for stopping fuel movement, a fuel loading error requires stopping fuel movement.
Distractor:	A. This interval for this surveillance is 7 days
Distractor:	C. It is acceptable to lower the fuel assembly before establishing the correct orientation; however, the correct orientation is to be established before lowering the fuel assembly into the assigned core location.
Distractor:	D. This is correct operation of the refueling interlocks. The rod block interlock light is lit when the refueling bridge is over the reactor core and the main hoist is loaded. When clear of the reactor core (proximity switch) the rod block clears.

References Provided: None

Question 22 Cross References (table item links)

10CFR55
- 43(b)(7)

Cognitive Level
- 2

NUREG 1123 KA Catalog Rev. 2
- G2.2.29 1.6/3.8 Knowledge of SRO fuel handling responsibilities

Level of Difficulty
- Level 2: System operation and response

LP
- O2-OPS-001-234-2-01 Rev. na

Question Source
- New

PROC
- N2-FHP-13.3, Rev. NA

Question Setting
- C1 (License class closed reference)

23 **SYSID: 22929** **Points: 1.00**

A plant startup is in progress with the following:

- Reactor power is 14%
- Containment Purge is required to reduce oxygen concentration to within Tech Spec limits
- Standby Gas Train A has just been declared inoperable

Which one of the following identifies the required containment purge outlet flowpath?

A. Simultaneously from the Suppression Chamber and Drywell through 2GTS*SOV102, the 2 inch purge valve.

B. Simultaneously from the Suppression Chamber and Drywell through 2GTS*AOV101, the 20 inch purge valve.

C. From the Suppression Chamber first through 2GTS*SOV102, the 2 inch purge valve.

D. From the Suppression Chamber first through 2GTS*AOV101, the 20 inch purge valve.

Answer: C

Associated objective(s):

LC2 03-01 NRC EXAM DEVELOPMENT AREA

Question 23 Details

Question Type:	Multiple Choice
Topic:	NRC SRO 23
System ID:	22929
User ID:	
Status:	Active
Must Appear:	No
Difficulty:	0.00
Time to Complete:	0
Point Value:	1.00
Cross Reference:	LC2 03-01
User Text:	
User Number 1:	0.00
User Number 2:	0.00
Comment:	O2-OPS-001-223-2-03 EO-1.7

N2-OP-61A D.12.0, D.3.0, E.2.0

Answer: C is correct. N2-OP61A Precaution and Limitation D.12.0 prohibits simultaneous purging from the DW and SC to prevent establishing a Suppression Pool bypass leakage pathway. SR 3.1.6.3.1 and N2-OP-61A D.3.0 allow purging with only one GTS subsystem operable provided that 2GTS8AOV101 (20 inch) valve is closed. Suppression Chamber purge should be performed before Drywell purge to minimize chance of DW SC vacuum breaker opening, per N2-OP-61A E.2.18 Note 1.

Distractors: A and B are incorrect. N2-OP61A Precaution and Limitation D.12.0 prohibits simultaneous purging from the DW and SC to prevent establishing a Suppression Pool bypass leakage pathway.

Distractor: D is incorrect. SR 3.1.6.3.1 and N2-OP-61A D.3.0 allow purging with only one GTS subsystem operable provided that 2GTS8AOV101 (20 inch) valve is closed.

References Provided: None

Question 23 Cross References (table item links)

10CFR55 GB 4/20/05
- ~~41~~ 43(b)(1)

Cognitive Level
- 1

NUREG 1123 KA Catalog Rev. 2
- G2.3.9 2.5/3.4 Knowledge of the process for performing a containment purge

Level of Difficulty
- Level 3: Higher order Knowledge item

LP
- O2-OPS-001-223-2-03 Rev. NA

Question Source
- New

PROC
- N2-OP-61A Rev. NA

TECHSPEC
- T.S.3.6.1.3 Rev. NA

Question Setting
- C1 (License class closed reference)

24 **SYSID: 22930** **Points: 1.00**

The plant is experiencing an event, with the following:

- Plant conditions justify the declaration of an ALERT
- Before an ALERT is actually declared, plant conditions improve and now plant conditions only justify the declaration of an UNUSUAL EVENT.
- Plant conditions justifying the declaration of an ALERT are no longer present.

Which one of the following describes correct actions to properly classify the event and notification in response to the above conditions?

A. Declare and report an UNUSUAL EVENT; circle "Unusual Event" in block 4 of the notification fact sheet. In block 8 of the same notification fact sheet, state that conditions for an ALERT were momentary and the time/date of its termination.

B. Declare and report an ALERT by circling "Alert" in block 4 of the notification fact sheet. Submit a separate notification to indicate the change in classification to an UNUSUAL EVENT by circling "Unusual Event" in block 4 of the notification fact sheet.

C. Declare and report an UNUSUAL EVENT; circle "Unusual Event" in block 4 of the notification fact sheet. No mention of the momentary ALERT and its termination is required in this notification, nor in any preceding or subsequent notifications to this one.

D. Declare and report an ALERT by circling "Alert" in block 4 of the notification fact sheet. In block 8 of the same notification fact sheet, state that conditions for an ALERT were momentary and the time/date of its termination, and current conditions only justify an UNUSUAL EVENT and the time/date of its declaration.

Answer: A

Associated objective(s):

LC2 03-01 NRC EXAM DEVELOPMENT AREA

Question 24 Details

Question Type:	Multiple Choice
Topic:	NRC SRO 24
System ID:	22930
User ID:	
Status:	Active
Must Appear:	No
Difficulty:	0.00
Time to Complete:	0
Point Value:	1.00
Cross Reference:	LC2 03-01
User Text:	
User Number 1:	0.00
User Number 2:	0.00
Comment:	O3-OPS-006-350-3-22 EO-1.2 EPIP-EPP-02: 3.1.4.c EPIP-EPP-20: 3.2.1

Answer:	A. **IF**: An EAL has been met or exceeded, but the EAL threshold or emergency condition no longer exists prior to making the emergency declaration (Transitory event), **THEN**: Classify current conditions (UNUSUAL EVENT) and declare the emergency, if necessary. Make notifications required for the declared emergency in accordance with EPIP-EPP-20. Notify State, County and NRC of transitory event (even if no emergency is declared).
Distractor:	B. It is not necessary to declare and report an alert. It is necessary to notify agencies of the transitory event and this is indicated by submitting two separate notifications – alert then unusual event.
Distractor:	C. See justification above. It is required to report the transitory event. EPIP-EPP-25, Emergency Classification and Recovery, provides no guidance for transitory events. It provides guidance for lowering the emergency classification when over-classified and for terminating the emergency from each of the emergency classification thresholds.
Distractor:	D. A notification of an unusual event is required. Notification of an alert is not required if it is a transitory event. EPIP-EPP-25, Emergency Classification and Recovery, provides

no guidance for transitory events. It provides guidance for lowering the emergency classification when over-classified and for terminating the emergency from each of the emergency classification thresholds.

References Provided: NOTIFICATION FACT SHEET – PART 1 (ensure the procedure number and revision in the footer of the fact sheet is removed – blacked out)

10CFR 55.43(b)(5) Note: Selection of correct procedure is implied rather than stated. To select the correct answer, the appropriate procedure or knowledge of that procedure was required.

Question 24 Cross References (table item links)

10CFR55

- 43(b)(5)

Cognitive Level

- 2

NUREG 1123 KA Catalog Rev. 2

- G2.4.38 2.2/4 Ability to take actions called for in the facility emergency plan, including (if required)supporting or acting as emergency coordinator

Level of Difficulty

- Level 3: Higher order Knowledge item

LP

- O3-OPS-006-350-2-22, Rev. NA

Question Source

- New

PROC

- EPIP-EPP-02 Rev. NA
- EPIP-EPP-20 Rev. NA

Question Setting

- C1 (License class closed reference)

EXAMINATION ANSWER KEY

U2 NRC SENIOR REACTOR OPERATOR WRITTEN EXAMINATION 2005

25 **SYSID: 22931** **Points: 1.00**

Given the following conditions:

- An ATWS concurrent with a LOCA has been in progress for twenty (20) minutes
- Reactor power is 15% and steady
- Reactor pressure being maintained 800-1000 psig
- Suppression Pool water level is within the TS limit
- Suppression Pool Temperature is 130°F and rising 5°F per minute
- RPV water level is –75 inches (Fuel Zone) and lowering 5 inches per minute
- EOP-C2, RPV Blowdown, **has just been** entered

Which one of the following is the correct emergency classification **upon entry into EOP-C2**, RPV Blowdown, assuming the correct classification is initially made based on the stated conditions?

A. Continue at an ALERT.

B. Continue at a SITE AREA EMERGENCY.

C. Reclassify from an ALERT to a SITE AREA EMERGENCY.

D. Reclassify from a ALERT to a GENERAL EMERGENCY.

Answer: B

Associated objective(s):

LC2 03-01 NRC EXAM DEVELOPMENT AREA

EXAMINATION ANSWER KEY

U2 NRC SENIOR REACTOR OPERATOR WRITTEN EXAMINATION 2005

Question 25 Details

Question Type:	Multiple Choice
Topic:	NRC SRO 25
System ID:	22931
User ID:	
Status:	Active
Must Appear:	No
Difficulty:	0.00
Time to Complete:	0
Point Value:	1.00
Cross Reference:	LC2 03-01
User Text:	
User Number 1:	0.00
User Number 2:	0.00
Comment:	O3-OPS-006-350-3-22 EO-1.2

EAL Matrix

Answer: B. Before the low RPV water level occurred, a Site Area Emergency should be declared because of the Failure of RPS, including RRCS, to bring the reactor subcritical. Upon entry into EOP-C2, RPV Blowdown, the classification should remain at a Site Area Emergency until after an evaluation it is determined if low pressure systems are capable of restoring and maintaining RPV water level. Escalation to a General Emergency is based on actual or imminent substantial core damage or melting with potential loss of primary containment. These conditions are not present at this time because adequate core cooling is still assured by presence of the mechanisms for adequate core cooling. Also, General emergency is based on not being able to maintain within the HCTL. The HCTL is not exceeded and is not the reason for the blowdown, the margin to the HCTL will increase substantially as rector pressure is rapidly lowered from the blowdown.

Distractor: A, C, & D See justification above.

References Provided: ***Unit 2 EAL Matrix***

10CFR 55.43(b)(5) Note: Selection of correct procedure is implied rather than stated. To select the correct answer, the appropriate procedure or knowledge of that procedure was required.

Question 25 Cross References (table item links)

10CFR55
- 43(b)(5)

Cognitive Level
- 3

NUREG 1123 KA Catalog Rev. 2
- G2.4.41 2.3/4.1 Knowledge of the emergency action level thresholds and classifications

Level of Difficulty
- Level 3: Higher order Knowledge item

LP
- O3-OPS-006-350-2-22, Rev. NA

Question Source
- New

PROC
- EAL Matrix, Rev. NA

Question Setting
- C1 (License class closed reference)