

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

1

ID: 1098269

Points: 1.00

WHICH ONE of the following identifies the location of the breaker that supplies electrical power directly to the Unit 2 Instrument Air Compressor, 2BK101?

- A. D234
- B. D234-R-H
- C. D244
- D. D244-R-H

Answer: D

Answer Explanation

Refer to 2S15.1.A (COL-2), 2B Instrument Air Compressor Normal Operating Lineup. Page 7 of 7, Step 62 shows 480 volt MCC D244-R-H supplying the 2BK101 compressor. Refer to 2S15.1.A (COL-1), 2A Instrument Air Compressor Normal Operating Lineup. Page 7 of 7, Step 63 shows 480 volt MCC D234-R-H supplying the 2AK101 compressor.

'D' is correct: D244-R-H. Correct for the reasons described above

'A' is wrong: D234. D234 is a 480 volt Load Center (LCC); one of its loads is MCC D234-R-H, which does supply power to the 2AK101 air compressor. Plausible for that reason.

'B' is wrong: D234-R-H. As already discussed, this MCC powers the 2AK101 air compressor, not the 2BK101 air compressor. Plausible to the examinee who confuses the two compressors.

'C' is wrong: D244. While D244 does supply its MCC D234-R-H, this choice is wrong because the question asks for the location of the breaker that supplies electrical power directly to the 2BK101 Instrument Air Compressor. Plausible to the examinee who believes that the air compressor motor is large enough (i.e., >100 horsepower) to warrant it being a load on the LCC (D244), rather than an MCC (i.e., <100 horsepower).

Question 1 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	3
Difficulty:	2.00
System ID:	1098269
User-Defined ID:	REV 00, 11/17/14
Cross Reference Number:	
Topic:	Recall power supply to Instrument Air Compressor 2BK101
Num Field 1:	2.8
Num Field 2:	2.8
Text Field:	300000 K2.01
Comments:	Level RO Tier 2

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	Group	1
	KA # and Rating	300000 K2.01 (2.8/2.8)
	KA Statement	300000 Instrument Air Knowledge of electrical power supplies to the following: K2.01 Instrument Air Compressor
	References	2S15.1.A (COL-1), Rev.5 2S15.1.A (COL-2), Rev.4
	Examinee References	None
	Learning Objective	LGSOPS0015, no specified objective
	Question source	New
	Question history	None
	Cognitive level	Lower
	10 CFR 55	41.7
	Comments	None

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2

ID: 1098270

Points: 1.00

Unit 1 plant conditions:

- LOCA in progress
- RPV pressure is 600 psig
- RPV level is -80", lowering
- No SRVs are open
- Operators have manually initiated the 1A Core Spray Loop
- A and C Core Spray Pumps are running with suctions from the Suppression Pool
- No other high or low pressure injection systems are running

WHICH ONE of the following describes the status of the Suppression Pool water inventory?

- A. Steady
- B. Lowering at about 6350 gpm
- C. Lowering at about 3175 gpm
- D. Lowering at about 775 gpm

Answer: A

Answer Explanation

The capacity of each Core Spray Pump is 3175 gpm. The 1A Core Spray Loop Min Flow Valve (HV-052-1F031A) automatically opens when a pump is running with that Loop's flow less than 775 gpm. When open, pump discharge is directed back to the Suppression Pool. The 1A Core Spray Loop Inboard Injection Valve (HV-052-1F005) is normally-CLOSED and automatically opens with the combination of a Core Spray initiation signal (auto or manual) AND RPV pressure below 455 psig. [S52.7.A, Manual Initiation After Failure of Automatic Injection During a LOCA, can be used to verify the 775 gpm min flow rate as well as the 455 psig automatic opening setpoint for the Inboard Injection Valve.]

'A' is correct: Steady. Stem conditions reveal that RPV pressure is still well above the opening pressure for the Inboard Injection Valve, and is well above the ~330 psig shutoff head for these pumps. Therefore, the pumps are running on min flow; i.e., recircing from/to the suppression pool at a rate of about 775 gpm, thus the pool water inventory is steady. Stem conditions state there are no other sources of water to or from the pool (no SRVs are open; no other injection systems are running); this ensures that only the operating 1A Core Spray Loop is influencing the pool water inventory.

'B' is wrong: Lowering at about 6350 gpm. This is plausible to the examinee who fails to recognize that, with RPV pressure at 600 psig, the pumps cannot be injecting. That examinee, therefore, selects this choice based on recalling that the combined capacity of the two running pumps (3175 gpm each) is about 6350 gpm. Since the pumps are taking (suctions) from the suppression pool at a rate of 6350 gpm, and simply injecting that water into the RPV in an attempt to mitigate the dropping RPV water level, the pool water inventory is being reduced at about 6350 gpm.

'C' is wrong: Lowering at about 3175 gpm. This is plausible for reasons nearly identical to those of choice 'B'. In this case, however, the examinee incorrectly recalls the combined capacity of the two running pumps; instead, that examinee applies the capacity of a single pump (3175 gpm).

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'D' is wrong: Lowering at about 775 gpm. This is plausible to the examinee who recognizes that the pumps cannot be injecting at an RPV pressure of 600 psig and recalls the min flow valve opening setpoint of 775 gpm (with an initiation signal). However, the examinee's thinking is flawed in that he/she fails to remember that as the pumps (together) are removing water from the pool at a rate of 775 gpm, so too are they returning (recircing) that same water to the pool at the same rate, thus maintaining a constant inventory of pool water.

Question 2 Info		
Question Type:	Multiple Choice	
Status:	Active	
Always select on test?	No	
Authorized for practice?	No	
Points:	1.00	
Time to Complete:	3	
Difficulty:	2.50	
System ID:	1098270	
User-Defined ID:	REV 00, 11/17/14	
Cross Reference Number:	LLOT0350.9	
Topic:	Recognize how Core Spray Pump operation impacts Supp Pool water inventory	
Num Field 1:	3.4	
Num Field 2:	3.4	
Text Field:	209001 K1.02	
Comments:	<div> <div>Level</div> <div>RO</div> <div>Tier</div> <div>2</div> <div>Group</div> <div>1</div> <div>KA # and Rating</div> <div>209001 K1.02 (3.4/3.4)</div> <div>KA Statement</div> <div>209001 Low Pressure Core Spray Knowledge of the physical connections and/or cause-effect relationships between LOW PRESSURE CORE SPRAY SYSTEM and the following: K1.02 Torus/suppression pool</div> <div>References</div> <div>S52.7.A, Rev.9</div> <div>Examinee</div> <div>None</div> <div>References</div> <div>Learning</div> <div>LLOT0350.9</div> <div>Objective</div> <div>Question source</div> <div>New</div> <div>Question history</div> <div>None</div> <div>Cognitive level</div> <div>Higher</div> <div>10 CFR 55</div> <div>41.7</div> <div>Comments</div> <div>None</div> </div>	

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3

ID: 1098287

Points: 1.00

Unit 1 is operating at 100% power, with the following:

- 1A SLC Pump is blocked for motor repairs
- 1B and 1C SLC Pumps are aligned for auto-start

1A SLC Pump repairs are now completed; clearances have been removed.

Per S48.1.A (SLC System Set-up for Normal Operation), operators have completed aligning 1A and 1B SLC Pumps for auto-start.

WHICH ONE of the following is an expected SLC related indication in the MCR?

- A. C SLCS PUMP AUTO-START STATUS TROUBLE alarm is sealed-in
- B. 1C SLC Pump white Pump Status light is EXTINGUISHED
- C. 1C SLC Pump amber OVERRIDE light is LIT
- D. 1C SLC Pump white Squib Valve Continuity light is EXTINGUISHED

Answer: C

Answer Explanation

Refer to S48.1.A, Section 4.8, which provides the direction for removing the 1C SLC Pump from an auto-start lineup and placing it back in standby status (note: the "standby" status of the 1C pump does not imply an auto-start capability). NOTE #1 of step 4.8.1 states that at no time should all 3 pumps be aligned for automatic injection. Follow the sequence of steps 4.8.4 thru 4.8.11. With the 1C Pump still aligned for auto-start, its control switch is in NORM and its INHIBIT-ENABLE switch is in ENABLE. When the operator places its control switch in STOP, the alarm comes in...C SLCS PUMP AUTO-START STATUS TROUBLE...and the 1C pump amber OVERRIDE lamp is LIT. The operator then places the INHIBIT-ENABLE switch in INHIBIT and the alarm clears. Finally, step 4.8.11 has the operator verify the final indications for the 1C pump in its standby status, including: both the Green and White (pump status) lights are LIT (the white light is simply a Power Available light), and the amber OVERRIDE light is LIT.

'C' is correct: 1C SLC Pump amber OVERRIDE light is LIT. Correct for the reasons described above.

'A' is wrong: C SLCS PUMP AUTO-START STATUS TROUBLE alarm is sealed-in. Refer to alarm response card ARC-MCR-107, A3, which describes the two conditions that will cause this alarm: C SLC Pump control switch in STOP with the INHIBIT-ENABLE switch in ENABLE, or, C SLC Pump control switch in NORM with the other switch in INHIBIT. As described above, S48.1.A steps 4.8.4 thru 4.8.11 left the 1C pump control switch in STOP with the INHIBIT-ENABLE switch in INHIBIT; therefore, this alarm is not sealed-in. Plausibility of this choice is based on inexperienced control room operators still lacking a solid understanding of the significance of this alarm and the particular conditions (not at all intuitive) that cause it.

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'B' is wrong: 1C SLC Pump white Pump Status light is **EXTINGUISHED**. This is plausible to the examinee who does not recall what this **WHITE** light means with respect to pump status. Often, a LIT white pump status light signifies that the pump is in a Standby status, ready for an automatic start (such as on the trip of the running pump(s)). Because this examinee does recall that the 1C SLC Pump (albeit in "standby" status) nevertheless will not auto-start, and he/she also recalls that the same lights belonging to the 1A and 1B pumps (which are capable of automatically starting) are in fact LIT, the examinee concludes that the white light for the 1C pump must be extinguished.

'D' is wrong: 1C SLC Pump white Squib Valve Continuity light is **EXTINGUISHED**. This is plausible to the examinee who incorrectly concludes that taking the 1C pump out of an auto-start lineup necessarily removes power from the associated squib valve (i.e., since there is no need for the pump to auto-start, there can be no need for the 1C squib valve to fire).

Question 3 Info		
Question Type:	Multiple Choice	
Status:	Active	
Always select on test?	No	
Authorized for practice?	No	
Points:	1.00	
Time to Complete:	3	
Difficulty:	2.50	
System ID:	1098287	
User-Defined ID:	REV 00, 11/17/14	
Cross Reference Number:	LLOT0048	
Topic:	Recognize MCR indications associated with a normal SLC Pump alignment	
Num Field 1:	4.0	
Num Field 2:	4.1	
Text Field:	211000 A1.09	
Comments:	<div> <div>Level</div> <div>RO</div> <div>Tier</div> <div>2</div> <div>Group</div> <div>1</div> <div>KA # and Rating</div> <div>211000 A1.09 (4.0/4.1)</div> <div>KA Statement</div> <div>211000 Standby Liquid Control System Ability to predict and/or monitor changes in parameters associated with operating the STANDBY LIQUID CONTROL SYSTEM controls including: A1.09 SBLC system lineup</div> <div>References</div> <div>S48.1.A, Rev.22 ARC-MCR-107, A3, Rev.1</div> <div>Examinee</div> <div>None</div> <div>References</div> <div></div> <div>Learning</div> <div>LLOT0048, no specified objective</div> <div>Objective</div> <div></div> <div>Question source</div> <div>New</div> <div>Question history</div> <div>None</div> <div>Cognitive level</div> <div>Lower</div> <div>10 CFR 55</div> <div>41.7</div> <div>Comments</div> <div>None</div> </div>	

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EXAMINATION ANSWER KEY

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4

ID: 1098291

Points: 1.00

Unit 1 plant conditions:

- Reactor scrammed on a total loss of feedwater
- RPV level is -50", down fast
- RPV pressure is 800 psig, steady
- Drywell pressure is 0.4 psig, steady

At T=0:

- 1D RHR Pump starts on a valid -129" RPV level signal
- All other ECCS pumps fail to start

WHICH ONE of the following identifies when the ADS SRVs will automatically OPEN, if at all?

- A. Will not automatically open
- B. In 105 seconds
- C. In 420 seconds
- D. In 525 seconds

Answer: D

Answer Explanation

The 1D RHR Pump running provides a permissive to the Div 3 ADS logic. Once RPV level reaches -129", a 420-second timer starts, bypassing the need for a concurrent High Drywell Pressure (1.69 psig) signal. When this 420-second timer expires, it allows the logic to then start the usual 105-second ADS Initiation Timer. When this 105-second timer expires (a total of 525 seconds ($420 + 105 = 525$) after the -129" level signal was received), the 5 ADS SRVs (S, H, M, E, K) will automatically OPEN. [To validate this information, refer to alarm response cards ARC-MCR-110, B3 and C4.]

'D' is correct: In 525 seconds. Correct for the reasons described above.

'A' is wrong: Will not automatically open. Plausible to the examinee who believe that until there exists the High DW Pressure signal, the ADS Initiation logic will remain as-is; that examinee has forgotten about the High DW Pressure Bypass Timer.

'B' is wrong: In 105 seconds. Plausible to the examinee who does not recognize the absence of the High DW Pressure signal and so believes that the 129" level signal is sufficient to immediately start the ADS Initiation (105-second) Timer.

'C' is wrong: In 420 seconds. Very plausible. A common mistake is for the examinee to forget that the 105-second timer piggy-backs on the 420-second timer; rather that examinee thinks in terms of the 420 second timer substituting for the 105-second timer...resulting in the auto-opening of the SRVs as soon as the 420-second timer expires.

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Question 4 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	3
Difficulty:	2.50
System ID:	1098291
User-Defined ID:	REV 00, 11/17/14
Cross Reference Number:	LGSOPS0050.IL4
Topic:	Predict when ADS SRVs will automatically open
Num Field 1:	3.9
Num Field 2:	3.9
Text Field:	218000 K1.06
Comments:	<div> <div>Level</div> <div>Tier</div> <div>Group</div> <div>KA # and Rating</div> <div>KA Statement</div> <div>References</div> <div>Examinee</div> <div>References</div> <div>Learning</div> <div>Objective</div> <div>Question source</div> <div>Question history</div> <div>Cognitive level</div> <div>10 CFR 55</div> <div>Comments</div> <div>RO</div> <div>2</div> <div>1</div> <div>218000 K1.06 (3.9/3.9)</div> <div>218000 ADS</div> <div>Knowledge of the physical connections and/or cause-effect relationships between AUTOMATIC DEPRESSURIZATION SYSTEM and the following: K1.06 Safety/relief valves</div> <div>LGSOPS0050, ADS lesson plan</div> <div>None</div> <div>LGSOPS0050.IL4</div> <div>Bank 556255</div> <div>None</div> <div>Higher</div> <div>41.7</div> <div>None</div> </div>

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

5

ID: 1104184

Points: 1.00

Unit 1 is operating at 30% power when the following occurs:

- Control rod 10-27 begins to drift out from position 24

Per ON-104 (Control Rod Problems), the RO inserts the drifting control rod.

WHICH ONE of the following:

- (1) identifies the target position for the drifting rod, and
- (2) the RDCS light sequence associated with inserting that rod?

- A. (1) Position 00
(2) INSERT light followed by SETTLE light
- B. (1) Position 00
(2) INSERT light, only
- C. (1) Position 24
(2) INSERT light, only
- D. (1) Position 24
(2) INSERT light followed by SETTLE light

Answer: B

Answer Explanation

Per ON-104, Step 2.2.3, the RO uses the "Continuous Insert" pushbutton. While that pb is being held, the INSERT light is lit. The target position is 00 ("fully inserted"), at which time, the RO release the pb and the INSERT lit extinguishes. In this mode of RDCS control, there is no SETTLE function; therefore, the SETTLE light remains extinguished.

'B' is correct: (1) Position 00; (2) INSERT light, only. Correct for the reasons described above.

'A' is wrong: (1) Position 00; (2) INSERT light followed by SETTLE light. Plausible to the examinee who fails to recall the ON-104 requirement for using Continuous Insert.

'C' is wrong: (1) Position 24; (2) INSERT light, only. Plausible to the examinee who fails to recall the ON-104 requirement to "fully insert" the drifting rod; as such, the suggestion of restoring that rod to its initial (pre-drift) position is plausible.

'D' is wrong: (1) Position 24; (2) INSERT light followed by SETTLE light. Plausible for reasons identical to that for choices 'A', 'C'.

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LGS 2015 ILT NRC EXAM

Question 5 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	3
Difficulty:	2.00
System ID:	1104184
User-Defined ID:	REV 00, 11/17/14
Cross Reference Number:	LGSOPS0073A
Topic:	Predict RDCS light status for a continuously inserted rod
Num Field 1:	4.0
Num Field 2:	4.2
Text Field:	201002 2.4.11
Comments:	<div> <div>Level</div> <div>RO</div> </div> <div> <div>Tier</div> <div>2</div> </div> <div> <div>Group</div> <div>2</div> </div> <div> <div>KA # and Rating</div> <div>201002 2.4.11 (4.0/4.2)</div> </div> <div> <div>KA Statement</div> <div>201002 RMCS 2.4.11 Knowledge of abnormal condition procedures.</div> </div> <div> <div>References</div> <div>ON-104, Rev.54</div> </div> <div> <div>Examinee</div> <div>None</div> </div> <div> <div>References</div> <div></div> </div> <div> <div>Learning</div> <div>LGSOPS0073A</div> </div> <div> <div>Objective</div> <div></div> </div> <div> <div>Question source</div> <div>Bank 555114</div> </div> <div> <div>Question history</div> <div>None</div> </div> <div> <div>Cognitive level</div> <div>Lower</div> </div> <div> <div>10 CFR 55</div> <div>41.7, 41.10</div> </div> <div> <div>Comments</div> <div>None</div> </div>

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

6

ID: 1098294

Points: 1.00

Unit 1 PRO is preparing to parallel D12 DG with the 201 Safeguard Bus, per ST-6-092-312-1 (D12 DG Slow Start Operability Test Run).

WHICH ONE of the following describes how the PRO prevents a D12 DG trip on reverse power, per the ST?

As soon the D12 DG output breaker closes, the PRO is directed to immediately load the DG to...

- A. 100-150 KW.
- B. 200-300 KW.
- C. 100-150 KVAR.
- D. 200-300 KVAR.

Answer: B

Answer Explanation

Refer to ST-6-092-312-1, steps 4.8.10 thru 4.8.12. Step 4.8.10 closes the DG output breaker. Step 4.8.11 directs the operators to immediately load the DG to 200-300 KW using the Speed Governor. Step 4.8.12 directs the operator to immediately load the DG to 100-150 KVAR.

'B' is correct: 200-300 KW. Per step 4.8.11, a real load of 200-300 KW must be immediately picked up by the DG in order to prevent actuating the "reverse power" relay (a device that senses ONLY "real" power (KW); it does not sense/respond to "reactive" power (KVAR)).

'A' is wrong: 100-150 KW. Plausible to the examinee who recalls a "100-150" band, but who confuses KVAR loading requirement as being associated with preventing a reverse power trip.

'C' is wrong: 100-150 KVAR. Plausible to the examinee who probably recalls both values from the ST (real load value and reactive load value), but who incorrectly associates the KVAR requirement with a reverse power trip. Especially plausible because the purpose of the step to immediately pick up the 100-150 KVAR is to ensure that DG remains in a "vars-out" condition and does not become a "vars-in" machine...a condition for which the DG is unanalyzed.

'D' is wrong: 200-300 KVAR. Plausible to the examinee who correctly recalls a "200-300" value but who confuses KVAR loading requirement as being associated with preventing a reverse power trip.

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Question 6 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	3
Difficulty:	2.00
System ID:	1098294
User-Defined ID:	REV 00, 11/17/14
Cross Reference Number:	LGSOPS0092B.IL6
Topic:	Recall how the operator prevents a reverse power D/G trip when paralleling
Num Field 1:	3.0
Num Field 2:	3.1
Text Field:	264000 A1.09
Comments:	<div> <div>Level</div> <div>Tier</div> <div>Group</div> <div>KA # and Rating</div> <div>KA Statement</div> <div>References</div> <div>Examinee</div> <div>References</div> <div>Learning</div> <div>Objective</div> <div>Question source</div> <div>Question history</div> <div>Cognitive level</div> <div>10 CFR 55</div> <div>Comments</div> <div>RO</div> <div>2</div> <div>1</div> <div>264000 A1.09 (3.0/3.1)</div> <div>264000 EDGs</div> <div>Ability to predict and/or monitor changes in parameters associated with operating the EMERGENCY GENERATORS (DIESEL/JET) controls including: A1.09 Maintaining minimum load on emergency generator (to prevent reverse power)</div> <div>ST-6-092-312-1, Rev.96</div> <div>None</div> <div>LGSOPS0092B.IL6</div> <div>New</div> <div>None</div> <div>Lower</div> <div>41.5</div> <div>None</div> </div>

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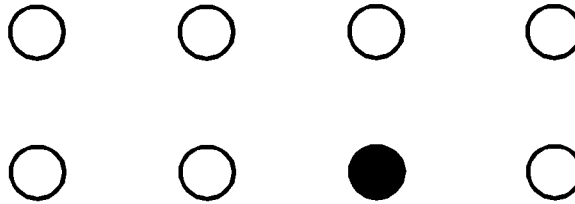
7

ID: 1098325

Points: 1.00

Refer to the figure below to answer this question.

SCRAM SYSTEM LOGIC



Unit 1 is operating at 100% power when the following occurs:

- One of the SCRAM SYSTEM LOGIC (white) lights extinguishes at 10C603
- The bulb is good

WHICH ONE of the following correctly interprets this indication?

- A. One RPS 'A' Channel is tripped.
- B. One RPS 'B' Channel is tripped.
- C. One-quarter (1/4) of the scram solenoid pilot valves have re-positioned.
- D. One-quarter (1/4) of the control rods have a de-energized solenoid.

Answer: D

Answer Explanation

A look at these 8 lights (at 10C603) will remind the examinee that the 4 lights across the top row (left-to-right) are labeled A1, A2, A3, A4, representing 120 VAC RPS power being supplied to the 'A' solenoid for the control rod HCUs in each of 4 rod Groups (Groups 1, 2, 3, 4, left-to-right). Similarly, the bottom row of lights are labeled B1, B2, B3, B4, and monitor the 120 VAC RPS power supplied to the 'B' solenoid for each rod Group. The extinguished 'B3' light (in the case of this question) indicates that RPS power is no longer being supplied to the 'B' solenoids for one of 4 Groups of rods; i.e., one-quarter of the control rods have a de-energized solenoid (the 'B' solenoid in this case). Such an indication can only occur as a result of a malfunction, most likely a blown fuse in the circuit that supplies 120 VAC RPS power to the 'B' solenoids of that one rod Group.

'D' is correct: One-quarter (1/4) of the control rods have a de-energized solenoid. Correct for the reasons described above.

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'A' is wrong: One RPS 'A' Channel is tripped. If a single RPS 'A' Channel (for example: Channel A1) were to trip, all 4 lights across the TOP row would extinguish; i.e., the indication expected for an RPS 'A' half-scam. Plausible to the examinee who either, too quickly jumps at the idea that a half-scam is indicated here, or who does not completely understand what each of these 8 lights represents.

'B' is wrong: One RPS 'B' Channel is tripped. If a single RPS 'B' Channel (for example: Channel B2) were to trip, all 4 lights across the BOTTOM row would extinguish; i.e., the indication expected for an RPS 'B' half-scam. Plausible for the same reason as for choice 'A'.

'C' is wrong: One-quarter (1/4) of the scram solenoid pilot valves have re-positioned. As a result of the ASCO solenoid valve Mod (ECR 04-00185), each control rod HCU only has one, dual-solenoid scram pilot solenoid valve. "Re-positioning" a pilot valve would take air off of the actuators for the Scram Inlet and Scram Outlet valves, causing that rod to scram into the core. The only way to re-position the pilot is by de-energizing both of its solenoids ('A' and 'B'). Before the ASCO Mod, each HCU had two single-solenoid scram pilot solenoid valves; the solenoid for one of the valves was powered by RPS 'A', the other valve's solenoid was powered by RPS 'B'. If power were interrupted to the solenoid for the RPS 'B' valve (for example), that one valve would re-position; however, the associated rod would not scram because the valve powered by RPS 'A' would be unaffected and not re-position, i.e., air would still be supplied to the HCU. This choice is plausible to the examinee confuses the "before Mod & after Mod" configurations for these valves.

Question 7 Info		
Question Type:	Multiple Choice	
Status:	Active	
Always select on test?	No	
Authorized for practice?	No	
Points:	1.00	
Time to Complete:	4	
Difficulty:	2.50	
System ID:	1098325	
User-Defined ID:	REV 00, 11/17/14	
Cross Reference Number:	LLOT0071.9D	
Topic:	Interpret extinguished Scram System Logic (white) lights	
Num Field 1:	3.4	
Num Field 2:	3.3	
Text Field:	212000 A1.11	
Comments:	<div> <div>Level</div> <div>RO</div> </div> <div> <div>Tier</div> <div>2</div> </div> <div> <div>Group</div> <div>1</div> </div> <div> <div>KA # and Rating</div> <div>212000 K3.06 (4.0/4.1)</div> </div> <div> <div>KA Statement</div> <div>212000 Reactor Protection System Knowledge of the effect that a loss or malfunction of the REACTOR PROTECTION SYSTEM will have on following: K3.06 Scram air header solenoid operated valves</div> </div> <div> <div>References</div> <div>C71-1020-E-009, Rev.16 C71-1020-E-010, Rev.28</div> </div> <div> <div>Examinee References</div> <div>None</div> </div> <div> <div>Learning Objective</div> <div>LLOT0071.9D</div> </div> <div> <div>Question source</div> <div>Bank 894672</div> </div>	

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

	Question history	None
	Cognitive level	Higher
	10 CFR 55	41.7
	Comments	None

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

8

ID: 1098327

Points: 1.00

Plant conditions:

- Unit 1 is in OPCON 3, cooling down for a refueling outage
- Unit 2 is in OPCON 1
- Two of the Ventilation Zones are inter-tied for drywell shield block removal

Unit 2 drywell pressure rises to 2.1 psig.

WHICH ONE of the following identifies the Zones that have aligned to SGTS?

- A. Zone 2, only
- B. Zones 2 and 3, only
- C. Zone 3, only
- D. Zones 1 and 3, only

Answer: A

Answer Explanation

During normal plant operations, ventilation is provided to three major Zones of the Secondary Containment; they are: Zone 1 (Unit 1 Reactor Enclosure), Zone 2 (Unit 2 Reactor Enclosure), and Zone 3 (the Common Refuel Floor). When one of the Units is shutting down for a refueling outage, prior to reaching OPCON 4, that Unit's Zone is inter-tied (interlocked) with Zone 2, to accommodate the removal of the drywell shield blocks. While the Zones are inter-tied, an isolation signal on one of those Zones will cause the other Zone to isolate, as well. For example: a Zone 1 isolation signal will isolate Zone 3, as well, and vice versa. Isolated Zones are automatically aligned to SGTS.

'A' is correct: Zone 2, only. With Unit 2 in OPCON 1, its ventilation Zone (Zone 2) is not inter-tied with any other. Therefore, a Unit 2 high drywell pressure signal will isolate only Zone 2.

'B' is wrong: Zones 2 and 3, only. Plausible to the examinee who incorrectly concludes that the "two Zones are inter-tied" statement in the stem alludes to Zones 2 and 3, rather than to Zones 1 and 3.

'C' is wrong: Zone 3, only. Plausible to the examinee who knows that only the Unit 2 ventilation Zone will isolate, but confuses the physical arrangement of the three Zones, thinking that they are designated 1-2-3 according to the left-to-right arrangement of the two Units with the common refuel floor in between (1-refuel floor-3).

'D' is wrong: Zones 1 and 3, only. Plausible to the examinee who believes that the fundamental purpose of inter-tying two Zones (1 and 3) is to cause them to be simultaneously isolated should an isolation condition occur on the non-tied Unit's Zone.

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

Question 8 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	3
Difficulty:	2.50
System ID:	1098327
User-Defined ID:	REV 00, 11/17/14
Cross Reference Number:	LLOT0076B.6
Topic:	Predict Zones that isolate in response to SGTS initiation signal
Num Field 1:	3.1
Num Field 2:	3.3
Text Field:	223002 K1.12
Comments:	<div> <div>Level</div> <div>RO</div> <div>Tier</div> <div>2</div> <div>Group</div> <div>1</div> <div>KA # and Rating</div> <div>223002 K1.12 (3.1/3.3)</div> <div>KA Statement</div> <div>223002 PCIS/NSSSS</div> <div>Knowledge of the physical connections and/or causeeffect relationships between PRIMARY CONTAINMENT ISOLATION SYSTEM/NUCLEAR STEAM SUPPLY SHUT-OFF and the following: K.12 Standby gas treatment system</div> <div>References</div> <div>LLOT0076A, Reactor Enclosure HVAC lesson plan LLOT0076B, Secondary Containment lesson plan</div> <div>Examinee References</div> <div>None</div> <div>Learning Objective</div> <div>LLOT0076A.3</div> <div>Question source</div> <div>Bank 560639</div> <div>Question history</div> <div>None</div> <div>Cognitive level</div> <div>Higher</div> <div>10 CFR 55</div> <div>41.7</div> <div>Comments</div> <div>None</div> </div>

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

9

ID: 1102907

Points: 1.00

An EQUALIZE charge is in progress on the Div 1 125 VDC Battery.

The procedure requires the charger to be placed back in FLOAT mode as soon as charging current drops to 5 amps.

WHICH ONE of the following describes the operational concern if the charger were to be kept in the EQUALIZE mode rather than placed back in FLOAT mode?

- A. Letting the charging current drop below the Tech Spec limit of 2 amps
- B. Letting the charging current drop below the Tech Spec limit of 1 amp
- C. Excessive loading of the other charger for the bus
- D. Excessive hydrogen generation

Answer: D

Answer Explanation

The discussion below is an excerpt from the D.O.E. Fundamentals Handbook, Electrical Science, Volume 2 of 4; specifically: Module 4, "Batteries".

A lead-acid battery cannot absorb all the energy from the charging source when the battery is nearing the completion of the charge. This excess energy dissociates water by way of electrolysis into hydrogen and oxygen. Oxygen is produced by the positive plate, and hydrogen is produced by the negative plate. This process is known as gassing. Gassing is first noticed when cell voltage reaches 2.30-2.35 volts per cell and increases as the charge progresses. At full charge, the amount of hydrogen produced is about one cubic foot per cell for each 63 ampere-hours input. If gassing occurs and the gases are allowed to collect, an explosive mixture of hydrogen and oxygen can be readily produced. It is necessary, therefore, to ensure that the area is well ventilated and that it remains free of any open flames or sparkproducing equipment.

'D' is correct: Excessive hydrogen generation. Correct for the reasons described above.

'A' is wrong: Letting the charging current drop below the Tech Spec limit of 2 amps. Per Tech Spec SR 4.8.2.1.a.1, each Division 1 and 2 battery float (charging) current must be < 2 amps. This choice is plausible to the examinee who either has a weak understanding of float/float current, or who incorrectly recalls the 2 amp limit, believing that the limit is instead > 2 amps.

'B' is wrong: Letting the charging current drop below the Tech Spec limit of 1 amp. Per Tech Spec SR 4.8.2.1.a.1, each Division 3 and 4 battery float (charging) current must be < 1 amp. This choice is plausible to the examinee who either has a weak understanding of float/float current, or who incorrectly recalls the 1 amp limit, believing that the limit is instead > 1 amp.

'C' is wrong: Excessive loading of the other charger for the bus. Plausible to the weaker examinee who mistakenly believes that when a charger is in its EQUALIZE mode, it is not carrying the bus. That examinee therefore concludes that the other charger (i.e., the Div 1 and Div 2 buses each have two chargers normally carrying ("floating") the respective bus) is carrying the bus alone, and is therefore vulnerable to being somehow overloaded.

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

Question 9 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	3
Difficulty:	2.00
System ID:	1102907
User-Defined ID:	REV 00, 11/17/14
Cross Reference Number:	LGSOPS0095
Topic:	Recall operational concern of battery hydrogen generation
Num Field 1:	2.6
Num Field 2:	2.9
Text Field:	263000 K5.01
Comments:	<div> <div>Level</div> <div>Tier</div> <div>Group</div> <div>KA # and Rating</div> <div>KA Statement</div> <div>References</div> <div>Examinee</div> <div>References</div> <div>Learning</div> <div>Objective</div> <div>Question source</div> <div>Question history</div> <div>Cognitive level</div> <div>10 CFR 55</div> <div>Comments</div> <div>RO</div> <div>2</div> <div>1</div> <div>263000 K5.01 (2.9/2.9)</div> <div>263000 DC Distribution</div> <div>Knowledge of the operational implications of the following concepts as they apply to D.C. ELECTRICAL DISTRIBUTION : K5.01</div> <div>Hydrogen generation during battery charging</div> <div>DOE Electrical Science Handbook, Volume 2, June 1992 Revision</div> <div>None</div> <div>None</div> <div>LGSOPS0095, no specified onjective</div> <div>New</div> <div>None</div> <div>Lower</div> <div>41.5</div> <div>None</div> </div>

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

10

ID: 1098329

Points: 1.00

Unit 1 plant conditions:

- OPCON 5*
- Core shuffle to final configuration is in progress per the Core Component Transfer Authorization sheet (CCTAS)

The following SRM count rate trends are observed between CCTAS steps #265 and #266:

<u>Time</u>	<u>1A</u>	<u>1B</u>	<u>1C</u>	<u>1D</u>
+1 min	70	42	20	55
+2 mins	120	100	45	120
+3 mins	162	102	102	165
+4 mins	200	103	160	175

WHICH ONE of the SRMs is indicating that an inadvertent criticality may be occurring?

- A. 1A
- B. 1B
- C. 1C
- D. 1D

Answer: C

Answer Explanation

Per FH-105 (Core Component Movement - Core Transfers), section 3.8.5.1, and ON-120 (Fuel Handling Problems), section 2.1, the doubling of an SRM count rate between two successive CCTAS steps is indication of an inadvertent criticality.

'C' is correct: 1C. Of the four SRMs, only the 1C count rate has doubled since the completion of CCTAS Step #266. At Time (completion of CCTAS Step #266) +1 minute, it reads 20 cpm; at Time +2 minutes, it reads 45 cpm (the first doubling); at Time +3 minutes, it reads 102 cpm (which is higher than 90 cpm which would be a second doubling).

'A', 'B', 'D' are wrong: 1A, 1B, 1D (respectively). Applying the same analysis to each of these other SRMs remaining reveals that none of them have experienced two doublings. Plausible to the examinee who either cannot recall the "two doublings" value for indication of an inadvertent criticality, or is less than competent in interpreting the SRM indications that result from the completion of CCTAS Step #266.

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

Question 10 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	3
Difficulty:	2.50
System ID:	1098329
User-Defined ID:	REV 00, 11/17/14
Cross Reference Number:	LLOT0760.4C
Topic:	Recognize inadvertent criticality from SRM readings during refueling
Num Field 1:	3.4
Num Field 2:	3.9
Text Field:	234000 A1.03
Comments:	<div> <div>Level</div> <div>RO</div> </div> <div> <div>Tier</div> <div>2</div> </div> <div> <div>Group</div> <div>2</div> </div> <div> <div>KA # and Rating</div> <div>234000 A1.03 (3.4/3.9)</div> </div> <div> <div>KA Statement</div> <div>234000 Fuel Handling Equipment Ability to predict and/or monitor changes in parameters associated with operating the FUEL HANDLING EQUIPMENT controls including: A1.03 core reactivity level</div> </div> <div> <div>References</div> <div>FH-105, Rev.47 ON-120, Rev.24</div> </div> <div> <div>Examinee</div> <div>None</div> </div> <div> <div>References</div> <div></div> </div> <div> <div>Learning</div> <div>LLOT0760.4C</div> </div> <div> <div>Objective</div> <div></div> </div> <div> <div>Question source</div> <div>Bank 561061</div> </div> <div> <div>Question history</div> <div>None</div> </div> <div> <div>Cognitive level</div> <div>Higher</div> </div> <div> <div>10 CFR 55</div> <div>41.5</div> </div> <div> <div>Comments</div> <div>None</div> </div>

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

11

ID: 1098330

Points: 1.00

Unit 1 is operating at 95% power, with the following:

- Both Recirc Pumps are running at 1295 rpm
- 1A ASD is operating with 3 cells bypassed on Phase 'A'

Then:

- One (1) more Phase 'A' cell fails on the 1A ASD

WHICH ONE of the following identifies:

- (1) the response of the 1A Recirc Pump, and
- (2) the required operator action?

- A.
 - (1) Trips
 - (2) Use Core Plate dP or Computer Point B017 to estimate Core Flow, then determine operating point on Power/Flow Map
- B.
 - (1) Trips
 - (2) Use Total Core Flow or Computer Point B018 to estimate Core Flow, then determine operating point on Power/Flow Map
- C.
 - (1) Remains running at a lower speed
 - (2) Verify Recirc Loop Flows are within 5% of each other
- D.
 - (1) Remains running at a lower speed
 - (2) Verify Recirc Loop Flows are within 10% of each other

Answer: B

Answer Explanation

Refer to S43.1.F, Attachment 2 FRR Alarm List, FRR # 2.1.1 (Cell Fault). If all 4 cells in a given phase are faulted/bypassed, an ASD trip occurs. Given these stem conditions, the result will be Single-Loop Operations (SLO), with 1B ASD (Recirc Pump) running at 1295 RPM. Operators enter OT-112, where Step 3.2 directs them to use Attachment 3 to determine the plant's operating point on the Power/Flow Map. Because the 1B Recirc Pump is operating at a speed >1000 rpm, the 2nd bullet of Step 3 applies...use the Core Flow recorder (XR-042-1R613) or computer point B018 to determine Core Flow.

'B' is correct: (1) Trips; (2) Use Total Core Flow or Computer Point B018 to estimate Core Flow, then determine operating point on Power/Flow Map. Correct for the reasons described above.

'A' is wrong: (1) Trips; (2) Use Core Plate dP or Computer Point B017 to estimate Core Flow, then determine operating point on Power/Flow Map. Plausible because it suggests the OT-112, Attachment 3, Step 3, 1st bullet action, which would be applicable if the 1B pump were operating at <1000 rpm.

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

'C' is wrong: (1) Remains running at a lower speed; (2) Verify Recirc Loop Flows are within 5% of each other. Plausible to the examinee who believes that the 1A ASD is still running (which would be the case if something less than all 4 cells had failed. In that case, the examinee would consider only the need to check the resulting Recirc Loop Flow mismatch that results (i.e., the approximate 100-150 rpm drop on the 1A ASD due to the cell failure, leaving the 1B ASD operating at the initial 1295 rpm) to verify that the applicable mismatch limit of Tech Spec LCO 3.4.1.3 is still satisfied. Per that LCO, the mismatch limit is 5% of rated core flow when the Total Core Flow is at or above 70% of rated core flow. This 5% limit would apply in the case of this question, being that the resulting Total Core Flow (after the 1A ASD speed drop) is still well above 70% of rated.

'D' is wrong: (1) Remains running at a lower speed; (2) Verify Recirc Loop Flows are within 10% of each other. Plausible for reasons almost identical of that for choice 'C'. In this case, however, the examinee either believes that the resulting Total Core Flow (after the 1A ASD speed drop) is below 70% of rated (in which case the 10% mismatch limit of LCO 3.4.1.3 applies), or simply confuses the two mismatch limits.

Question 11 Info		
Question Type:	Multiple Choice	
Status:	Active	
Always select on test?	No	
Authorized for practice?	No	
Points:	1.00	
Time to Complete:	5	
Difficulty:	3.00	
System ID:	1098330	
User-Defined ID:	REV 00, 11/17/14	
Cross Reference Number:	LGSOPS1540.2	
Topic:	Determine OT-112 actions based on resulting core flow after ASD trip	
Num Field 1:	3.1	
Num Field 2:	3.2	
Text Field:	295001 AA1.07	
Comments:	<div> <div>Level</div> <div>RO</div> <div>Tier</div> <div>1</div> <div>Group</div> <div>1</div> <div>KA # and Rating</div> <div>295001 AA1.07 (3.1/3.2)</div> <div>KA Statement</div> <div>295001 Partial or Complete Loss of Forced Core Flow Circulation</div> <div>Ability to operate and/or monitor the following as they apply to PARTIAL OR COMPLETE LOSS OF FORCED CORE FLOW CIRCULATION: AA1.07 Nuclear boiler instrumentation system</div> <div>References</div> <div>OT-112, Rev.52</div> <div>S43.1.F, Rev.1</div> <div>U/1 Tech Spec 3.4.1.3 (latest)</div> <div>Examinee</div> <div>None</div> <div>References</div> <div></div> <div>Learning</div> <div>LGSOPS1540.2</div> <div>Objective</div> <div></div> <div>Question source</div> <div>Bank 974482</div> <div>Question history</div> <div>None</div> <div>Cognitive level</div> <div>Higher</div> <div>10 CFR 55</div> <div>41.7, 41.10</div> </div>	

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

	Comments	None
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EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

12

ID: 1098331

Points: 1.00

Unit 1 is operating at 100% power with a normal electrical lineup.

A ground fault occurs on the 11 Unit Aux Bus.

WHICH ONE of the following identifies the automatic plant response?

- A. Reactor scrams due to low RPV water level
- B. Reactor scrams due to a main turbine trip
- C. Reactor remains operating but at a significantly lower power
- D. Reactor remains operating but at a lower main condenser vacuum

Answer: A

Answer Explanation

Refer to drawing E-0001, Sheet 1 (Single-Line Diagram - Station). With the Main Generator on the grid, 11 Unit Aux Bus is normally powered from the 11 Unit Aux Transformer via breaker 252-10113. A ground fault on the 11 Unit Aux Bus trips and locks out the 252-10113 breaker and prevents closure of the alternate supply breakers 252-10102 (from the 10 Startup Bus) and 252-10106 (from the 20 Startup Bus), de-energizing all 11 Unit Aux Bus loads. The following important loads trip on the loss of the 11 Unit Aux Bus (refer to alarm response card ARC-MCR-126, B1 to validate): 1A ASD/Recirc Pump; 1A and 1C Circ Water Pumps; and 1A and 1C Condensate Pumps. While the 1A Recirc Pump trip will result in Single-Loop Operations (SLO), it will not produce an automatic reactor scram. While the trip of two running Circ Water Pumps (leaving only two CW Pumps running) might otherwise cause main condenser vacuum to degrade, the Recirc Pump trip causes a more-than-ample reduction in reactor power (to about 55%) that will preclude the drop in main condenser vacuum. The limiting concern, then, is the trip of the two Condensate Pumps (1A and 1C). When they trip, the Reactor Feed Pumps (RFPs) trip (in a time-delayed sequence) on low suction pressure, resulting in a rapid drop in RPV water level and an automatic scram at +12.5" (low RPV water level).

'A' is correct: Reactor scrams due to low RPV water level. Correct for the reasons described above.

'B' is wrong: Reactor scrams due to a main turbine trip. Plausible to the examinee who confuses the 11 Unit Aux Bus, which powers two of the condensate Pumps, with the 12 Unit Aux Bus, which powers only one Condensate Pump. In that case, the examinee believes that only the 1B Condensate Pump has tripped. If that were the case, an automatic Recirc Pump runback would occur, but so too would the trip of two Circ Water Pumps, causing main condenser vacuum to drop to the point of a main turbine trip on low vacuum (at 21.5" Hg Vac).

'C' is wrong: Reactor remains operating but at a significantly lower power. Plausible to the examinee who is able to determine all of the major pumps that trip (as identified above), but who incorrectly concludes that the Recirc Pump trip produces a large enough power reduction so as to preclude the loss of any more than the 1C RFP on a low suction pressure trip. That examinee recalls that the low suction pressure trip for the RFPs is time-delay staggered...1C trip first, followed by the 1B, 5 seconds later, then the 1A, 5 seconds after that...the examinee incorrectly concludes that the unloading of the 1C RFP from the single, running Condensate Pump (1B), allows the 1A and 1B RFP to remain in operating, thereby preventing RPV water level from lowering to the +12.5" low level scram setpoint.

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

'D' is wrong: Reactor remains operating but at a lower main condenser vacuum. Plausible for reasons similar to that of choice 'A'. In this case, the examinee believes that only one RFP will trip on low suction pressure, and forgets that the 1A ASD/Recirc Pump tripped. This examinee concludes that reactor power remains essentially unchanged, but with the plant operating at a degraded vacuum due to the dual-Circ Water Pump trip. Since the stem asks for the "automatic plant response", this examinee determines that the reactor will in fact remain operating, allowing ample time for operators to enter OT-116 (Loss of Condenser Vacuum) and mitigate the degrading vacuum by manually reducing power using Recirc.

Question 12 Info		
Question Type:	Multiple Choice	
Status:	Active	
Always select on test?	No	
Authorized for practice?	No	
Points:	1.00	
Time to Complete:	4	
Difficulty:	3.00	
System ID:	1098331	
User-Defined ID:	REV 00, 11/17/14	
Cross Reference Number:	LLOT0540.13E	
Topic:	Loss of 11 Unit Aux Bus - Predict plant response and the reason for that response	
Num Field 1:	3.7	
Num Field 2:	3.7	
Text Field:	295003 AK3.05	
Comments:	<div> <div>Level</div> <div>RO</div> </div> <div> <div>Tier</div> <div>1</div> </div> <div> <div>Group</div> <div>1</div> </div> <div> <div>KA # and Rating</div> <div>295003 K3.05 (3.7/3.7)*</div> </div> <div> <div>KA Statement</div> <div>295003 Partial or Complete Loss of AC Knowledge of the reasons for the following responses as they apply to PARTIAL OR COMPLETE LOSS OF A.C. POWER :</div> </div> <div> <div>References</div> <div>AK3.05 Reactor SCRAM E-0001, Sheet 1, Rev.29 ARC-MCR-126, B1, Rev.2 OT-116, Rev.37</div> </div> <div> <div>Examinee</div> <div>None</div> </div> <div> <div>References</div> <div></div> </div> <div> <div>Learning</div> <div>LLOT0540.13e</div> </div> <div> <div>Objective</div> <div></div> </div> <div> <div>Question source</div> <div>New</div> </div> <div> <div>Question history</div> <div>None</div> </div> <div> <div>Cognitive level</div> <div>Higher</div> </div> <div> <div>10 CFR 55</div> <div>41.5</div> </div>	

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

	<p>Comments</p> <p>*Although the selected KA is a "reason for the [Scram] response", we've framed the question in such a way that only the correct answer ('A') and a similarly constructed distracter ('B') suggest that "reason." To optimize the psychometrics, we've intentionally omitted the "reason" aspect from the remaining distracters ('C' and 'D'), as well as from the question statement, itself. Because the correct answer choice does address the "reason" aspect (and is balanced by choice 'B'), this construct adequately provides the required KA match.</p>
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EXAMINATION ANSWER KEY

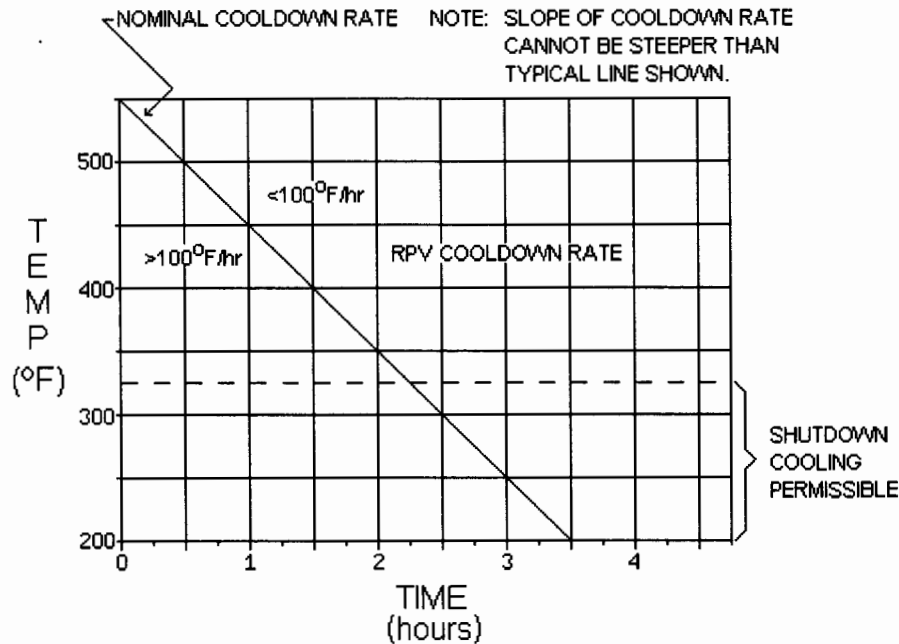
LGS 2015 ILT NRC EXAM

13

ID: 1098336

Points: 1.00

100°F/Hr COOLDOWN RATE



Unit 2 refueling outage is in progress.

Unit 1 plant startup is in progress when a fire causes operators to evacuate the MCR.

Operators commence a plant cooldown from the RSP, with the following:

- RPV pressure indicates 685 psig
- RPV water level indicates +30"

(Assume indicated RPV water level is held constant and cooldown rate is established at maximum allowed.)

WHICH ONE of the following identifies the **EARLIEST** approximate time from now that Shutdown Cooling can be initiated, and how Wide Range RPV water level indication will then compare to actual level?

	<u>SDC Initiation</u>	<u>Wide Range Level</u>
A.	2.25 hours from now	Lower than actual
B.	1.75 hours from now	Lower than actual
C.	1.75 hours from now	Higher than actual
D.	2.25 hours from now	Higher than actual

Answer: C

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

Answer Explanation

Per the Steam Tables: at 685 psig (700 psia), saturation temperature is 503°F (approx. 500°F). Refer to SE-1, Attachment 3 (same Figure as that embedded in the question stem). Starting at 500°F (on the y-axis), simply draw a line exactly parallel to the given line; where that drawn line intersects the horizontal (x-axis) dotted-line ('SDC Permissible') is the time ('from now') it will take to allow SDC to be placed in service...i.e., approximately 1.75 hours from now.

The RSP uses Wide Range level indication, which is calibrated for "hot" conditions (rated pressure). Sensor/Detector Fundamentals reminds us that "hot calibrated indications read HIGHER than actual when operated at cold conditions." Thus, RSP level will be HIGHER than actual when operators place SDC in service.

'C' is correct: 1.75 hours from now; Higher than actual. Correct for the above reasons.

'A' is wrong: 2.25 hours from now; Lower than actual. The first part is plausible to the examinee who inappropriately plots the time on the curve given in the Figure (that curve begins at 550°F rather than at 500°F), in which case, the elapsed time "from now" would be approximately 2.25 hours. The second part is plausible to the examinee who cannot recall the Generic Fundamentals regarding the inaccuracy of RPV level instruments when operating at other than their calibrated conditions.

'B' is wrong: 1.75 hours from now; Lower than actual. The second part is plausible for the same reason as for choice 'A'.

'D' is wrong: 2.25 hours from now; Higher than actual. The first part is plausible for the same reason as for choice 'A'.

Question 13 Info		
Question Type:	Multiple Choice	
Status:	Active	
Always select on test?	No	
Authorized for practice?	No	
Points:	1.00	
Time to Complete:	5	
Difficulty:	2.50	
System ID:	1098336	
User-Defined ID:	REV 00, 11/17/14	
Cross Reference Number:	LGSOPS2000.04	
Topic:	SE-1 - Plant Cooldown, Determine Time Until SDC is permitted	
Num Field 1:	3.3	
Num Field 2:	3.5	
Text Field:	295016 AA2.06	
Comments:	<div> <div>Level</div> <div>Tier</div> <div>Group</div> <div>KA # and Rating</div> <div>KA Statement</div> <div>References</div> </div> <div> <div>RO</div> <div>1</div> <div>1</div> <div>295016 AA2.06 (3.3/3.5)</div> <div>295016 Control Room Abandonment Ability to determine and/or interpret the following as they apply to CONTROL ROOM ABANDONMENT: AA2.06 Cooldown rate</div> <div>SE-1, Rev.70</div> </div>	

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

	Examinee	Steam Tables (per Chief Examiner: is <u>not</u>
	References	counted as an "open reference")
	Learning	LGSOPS2000.04
	Objective	
	Question source	Bank 973777
	Question history	None
	Cognitive level	Higher
	10 CFR 55	41.10
	Comments	None

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

14

ID: 1098344

Points: 1.00

Unit 2 is operating at 100% power.

WHICH ONE of the following, by itself, requires a Unit 2 Tech Spec LCO Action that is 1-hour or less?

- A. An interlock failure is allowing both doors of the R.E. 217' NW Airlock to be opened at the same time
- B. 2B Recirc Pump trips
- C. Div 3 125 VDC Battery Charger is declared inoperable
- D. An EHC malfunction causes RPV pressure to reach 1060 psig and stabilize there

Answer: D

Answer Explanation

Refer to the following Unit 2 (U/2) Tech Specs:

- TS 3.4.1.1.a (one recirc loop not in service) is a "within 4 hours" action
- TS 3.4.6.2 (reactor pressure above 1053 psig) is a "within 15 minutes" action
- TS 3.6.5.1.1 (reactor enclosure secondary containment integrity not maintained) is a "within 4 hours" action
- TS 3.8.2.1.a.1 (one charger inoperable) is a "within 2 hours" action

'D' is correct: An EHC malfunction causes RPV pressure to reach 1060 psig and stabilize there.

Correct per TS 3.4.6.2 Action, as described above.

'A' is wrong: An interlock failure is allowing both doors of the R.E. 217' NW Airlock to be opened at the same time.

'B' is wrong: 2B Recirc Pump trips.

'C' is wrong: Div 3 125 VDC Battery Charger is declared inoperable.

All three distracters suggest fairly short Action Times (4 hours or less); therefore, each is plausible when asked "from-memory".

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

Question 14 Info		
Question Type:	Multiple Choice	
Status:	Active	
Always select on test?	No	
Authorized for practice?	No	
Points:	1.00	
Time to Complete:	3	
Difficulty:	2.50	
System ID:	1098344	
User-Defined ID:	REV 00, 11/17/14	
Cross Reference Number:	LLOT0041B.9	
Topic:	High RPV Pressure - Recognize condition requiring 1-hour TS Action	
Num Field 1:	3.9	
Num Field 2:	4.5	
Text Field:	295025 2.2.39	
Comments:	<div> <div>Level</div> <div>RO</div> </div> <div> <div>Tier</div> <div>1</div> </div> <div> <div>Group</div> <div>1</div> </div> <div> <div>KA # and Rating</div> <div>295025 2.2.39 (3.9/4.5)</div> </div> <div> <div>KA Statement</div> <div>295025 High Reactor Pressure 2.2.39 Knowledge of less than or equal to one hour Technical Specification action statements for systems</div> </div> <div> <div>References</div> <div>U/2 Tech Spec 3.4.6.2 (latest) U/2 Tech Spec 3.1.3.6 (latest) U/2 Tech Spec 3.4.1.1 (latest) U/2 Tech Spec 3.8.2.1 (latest)</div> </div> <div> <div>Examinee References</div> <div>None</div> </div> <div> <div>Learning Objective</div> <div>LLOT0041B.9</div> </div> <div> <div>Question source</div> <div>New</div> </div> <div> <div>Question history</div> <div>None</div> </div> <div> <div>Cognitive level</div> <div>Lower</div> </div> <div> <div>10 CFR 55</div> <div>41.7</div> </div> <div> <div>Comments</div> <div>None</div> </div>	

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

15

ID: 1098353

Points: 1.00

WHICH ONE of the following identifies a possible automatic actuation of a Unit 1 fire protection (water) system?

- A. Heat detectors sense a fire in the Main Generator Exciter
- B. Heat detectors sense a fire in the Main Turbine Lube Oil Reservoir
- C. Smoke detectors sense a fire in the RCIC Pump Room
- D. Smoke detectors sense a fire in the Remote Shutdown Panel Room

Answer: B

Answer Explanation

With only one exception, heat detectors are used to actuate fire protection water systems (sprinklers and sprays), but smoke detectors are used solely to actuate Fire Alarm Panel alarms. The one exception is: Control Building Elevation 217' Switchgear I and II, which uses smoke detectors to actuate Pre-Action Sprinklers (refer to alarm response card ARC-MCR-006, J-2-U, to validate this).

'B' is correct: Heat detectors sense a fire in the Main Turbine Lube Oil Reservoir. Per ARC-MCR-006, B-4-U, heat detector devices 1HD936-1 thru 936-8 are used to actuate wet pipe and deluge sprinkler systems.

'A' is wrong: Heat detectors sense a fire in the Main Generator Exciter. Per ARC-MCR-006, H-5-L, the Exciter does use heat detectors, but for alarm only. Additionally, the area uses CO2, not water. Plausible to the examinee who does not recognize that such an enclosure as the Alterrex Exciter would NOT use water as an extinguishing agent.

'C' is wrong: Smoke detectors sense a fire in the RCIC Pump Room. Per ARC-MCR-006, L-1-L, the RCIC Pump Room has only smoke detectors, and has NO automatic fire extinguishing agent of any type. Plausible to the examinee who fails to recall that, except for the one case (described above), smoke detectors are NOT used to actuate fire systems.

'D' is wrong: Smoke detectors sense a fire in the Remote Shutdown Panel Room. Per ARC-MCR-006, J-3-L, the Remote Shutdown Panel Room uses HALON, only. Plausible for the same reason as for choice 'C'.

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

Question 15 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	3
Difficulty:	3.00
System ID:	1098353
User-Defined ID:	REV 00, 11/17/14
Cross Reference Number:	LGSOPS0022.5
Topic:	Recall relationship between fire detectors and fire water systems
Num Field 1:	2.6
Num Field 2:	2.7
Text Field:	600000 AK2.01
Comments:	<div> <div>Level</div> <div>RO</div> </div> <div> <div>Tier</div> <div>1</div> </div> <div> <div>Group</div> <div>1</div> </div> <div> <div>KA # and Rating</div> <div>600000 AK2.01 (2.6/2.7)</div> </div> <div> <div>KA Statement</div> <div>600000 Plant Fire On Site Knowledge of the interrelations between PLANT FIRE ON SITE and the following: AK2.01 Sensors / detectors and valves</div> </div> <div> <div>References</div> <div> ARC-MCR-006, B-4-U, Rev.1 ARC-MCR-006, H-5-L, Rev.3 ARC-MCR-006, L-1-L, Rev.1 ARC-MCR-006, J-3-L, Rev.6 ARC-MCR-006, J-2-U, Rev.1 </div> </div> <div> <div>Examinee</div> <div>None</div> </div> <div> <div>References</div> <div></div> </div> <div> <div>Learning</div> <div>LGSOPS0022.5</div> </div> <div> <div>Objective</div> <div></div> </div> <div> <div>Question source</div> <div>New</div> </div> <div> <div>Question history</div> <div>None</div> </div> <div> <div>Cognitive level</div> <div>Lower</div> </div> <div> <div>10 CFR 55</div> <div>41.4</div> </div> <div> <div>Comments</div> <div>None</div> </div>

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

16

ID: 1098424

Points: 1.00

Plant conditions during the Summer with heavy grid loading conditions:

- Unit 1 is in OPCON 4 (forced outage)
- Unit 2 is operating at 100% power
- Normal electrical lineup for these Unit conditions

TSO informs LGS of the following:

- The Post Trip Contingency Voltage Drop (PTCVD) for the 230 KV system has exceeded its limit

Operators enter E-5 (Grid Emergency) and, as directed by that procedure, perform the following:

- Take the actions to "harden" the 10 Bus

WHICH ONE of the following describes:

- (1) the action of "hardening" the 10 Bus, and
- (2) the reason for taking that action?

- (1) Removes certain 13.2 KV loads from the 12 Unit Aux Bus
(2) Help ensure that the grid can handle the loads on the Unit 2
Safeguard Buses should that Unit scram
- (1) Removes certain 13.2 KV loads from the 11 Unit Aux Bus
(2) Minimize the risk of losing Shutdown Cooling on Unit 1
- (1) Removes certain 13.2 KV loads from the 11 Unit Aux Bus
(2) Help ensure that the grid can handle the loads on the Unit 2
Safeguard Buses should that Unit scram
- (1) Removes certain 13.2 KV loads from the 12 Unit Aux Bus
(2) Minimize the risk of losing Shutdown Cooling on Unit 1

Answer: C

Answer Explanation

Refer to the E-5 (Grid Emergency) Bases; with respect to this question, these are the key sections/steps:

- 3.13.2 addresses exceeding the PTCVD limits for the 10 Bus; specifically, 3.13.2.3 directs operators to take the actions of Attachment 1
- Attachment 1, step 2.1.4, directs operators to consider the realigning safety buses and/or performing the hardening actions per Attachment 3 (in the case of this question...for the 10 Bus)
- The "bases" statement directly below Attachment 1, step 2.1.4, describes the reason for 2.1.4 as: "improving the margin for the PTCVD percentage"
- Attachment 3 is all about "Actions to Harden the 10 Bus to improve PTCVD limits" with one unit shutdown and one unit operating
- Regardless of the current safety bus alignment for the Units (not defined for the stem of this question), the Attachment 3 actions, in either case, involve removing one or more 13.2 KV loads (Condensate Pump and/or Circ Water Pump) from the 10 Bus

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

- The "Bases" discussion at the bottom of Attachment 1, page 1, describes the operational concern regarding "inadequate contingency voltage" (which is the concern when it's been determined that either the 230 KV or 500 KV system is exceeding its PTCVD limits)
- The "Bases" discussion below Table 1 of step 3.13.2 (in the procedure body) clarifies this concern a bit more... "If LGS post trip percentage voltage drop is in excess of the values used in the Voltage Regulation study then the analysis for safeguard bus loading cannot be assured"
- The "Bases" discussion below step 1.4 (in the procedure body) adds more clarification: "The Limerick Voltage regulation study includes various assumptions on the impacts to the transmission system following the trip of an LGS unit..."

Given all of the above information, here is the single concept to be understood (explained in a way that addresses this question's stem conditions and answer choices):

We "harden" the 10 Bus by removing unneeded 13.2 KV loads belonging to the shutdown Unit (Unit 1) that are being fed from the 10 Bus. The "normal electrical lineup" (in the stem) means that **the 10 Bus is powering the 11 Unit Aux (13.2 KV) Bus**. It also means that the 12 Unit Aux Bus is being powered from the 20 Bus (which is NOT a concern with respect to this question). [Refer to 1S91.9.A (COL), page 3, steps 5, 6, 11, and 12, to validate this.]

The reason for hardening the 10 Bus is to "lighten" the load on that bus, and in-turn lighten the load on the 230 KV system, so as to allow that system to operate at a somewhat higher voltage (i.e., increasing the voltage drop margin). This acknowledges that, should Unit 2 trip (scram), it may result in a decrease in 230 KV system voltage (on an already heavily-loaded grid system). **Having the improved PTCVD margin beforehand will help ensure that the offsite power system will still be able to safely handle the loading of the Unit 2 safeguards (safe shutdown) buses.**

'C' is correct: (1) Removes certain 13.2 KV loads from the 11 Unit Aux Bus; (2) Help ensure that the grid can handle the loads on the Unit 2 Safeguard Buses should that Unit scram. Correct for the reasons described above.

'A' is wrong: (1) Removes certain 13.2 KV loads from the 12 Unit Aux Bus; (2) Help ensure that the grid can handle the loads on the Unit 2 Safeguard Buses should that Unit scram. Part (1) is wrong, but plausible to the examinee who cannot recall the normal 10 Bus / 20 Bus alignment already discussed. That examinee incorrectly determines that the 12 Unit Aux Bus is being fed from the 10 Bus; it is not.

'B' is wrong: (1) Removes certain 13.2 KV loads from the 11 Unit Aux Bus; (2) Minimize the risk of losing Shutdown Cooling on Unit 1. Part (2) is wrong, but plausible to the examinee who is distracted by the fact that maintaining Shutdown Cooling in operation is always extremely important (as it is here for Unit 1). While such is true, it is not the reason for any of the actions directed by the E-5 procedure.

'D' is wrong: (1) Removes certain 13.2 KV loads from the 12 Unit Aux Bus; (2) Minimize the risk of losing Shutdown Cooling on Unit 1. Both Parts are wrong, but plausible for the same reasons as for choices 'A' and 'B'.

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

Question 16 Info																												
Question Type:	Multiple Choice																											
Status:	Active																											
Always select on test?	No																											
Authorized for practice?	No																											
Points:	1.00																											
Time to Complete:	4																											
Difficulty:	3.50																											
System ID:	1098424																											
User-Defined ID:	REV 00, 11/17/14																											
Cross Reference Number:	LLOT1566.02																											
Topic:	Recall action and reason for that action of hardening 10 Bus per E-5, Grid Emergency																											
Num Field 1:	3.6																											
Num Field 2:	3.9																											
Text Field:	700000 AK3.02																											
Comments:	<table><tr><td>Level</td><td>RO</td></tr><tr><td>Tier</td><td>1</td></tr><tr><td>Group</td><td>1</td></tr><tr><td>KA # and Rating</td><td>700000 AK3.02 (3.6/3.9)</td></tr><tr><td>KA Statement</td><td>700000 Generator Voltage and Electric Grid Disturbances Knowledge of the reasons for the following responses as they apply to GENERATOR VOLTAGE AND ELECTRIC GRID DISTURBANCES: AK3.02 Actions contained in abnormal operating procedure for voltage and grid disturbances</td></tr><tr><td>References</td><td>E-5, Rev.21 E-5 Bases, Rev.21 E-0001, Sheet 1, Rev.29 1S91.9.A (COL), Rev.1</td></tr><tr><td>Examinee References</td><td>None</td></tr><tr><td>Learning Objective</td><td>LLOT1566.02 (in lesson plan LGSOPS2000)</td></tr><tr><td>Question source</td><td>New</td></tr><tr><td>Question history</td><td>None</td></tr><tr><td>Cognitive level</td><td>Higher*</td></tr><tr><td>10 CFR 55</td><td>41.4, 41.10</td></tr><tr><td>Comments</td><td>* Justification for Higher Cognitive categorization: Part (1) of each answer choice requires the examinee to recognize the 10 Bus / 20 Bus alignments that must exist with Unit 1 shutdown and Unit 2 operating.</td></tr></table>		Level	RO	Tier	1	Group	1	KA # and Rating	700000 AK3.02 (3.6/3.9)	KA Statement	700000 Generator Voltage and Electric Grid Disturbances Knowledge of the reasons for the following responses as they apply to GENERATOR VOLTAGE AND ELECTRIC GRID DISTURBANCES: AK3.02 Actions contained in abnormal operating procedure for voltage and grid disturbances	References	E-5, Rev.21 E-5 Bases, Rev.21 E-0001, Sheet 1, Rev.29 1S91.9.A (COL), Rev.1	Examinee References	None	Learning Objective	LLOT1566.02 (in lesson plan LGSOPS2000)	Question source	New	Question history	None	Cognitive level	Higher*	10 CFR 55	41.4, 41.10	Comments	* Justification for Higher Cognitive categorization: Part (1) of each answer choice requires the examinee to recognize the 10 Bus / 20 Bus alignments that must exist with Unit 1 shutdown and Unit 2 operating.
Level	RO																											
Tier	1																											
Group	1																											
KA # and Rating	700000 AK3.02 (3.6/3.9)																											
KA Statement	700000 Generator Voltage and Electric Grid Disturbances Knowledge of the reasons for the following responses as they apply to GENERATOR VOLTAGE AND ELECTRIC GRID DISTURBANCES: AK3.02 Actions contained in abnormal operating procedure for voltage and grid disturbances																											
References	E-5, Rev.21 E-5 Bases, Rev.21 E-0001, Sheet 1, Rev.29 1S91.9.A (COL), Rev.1																											
Examinee References	None																											
Learning Objective	LLOT1566.02 (in lesson plan LGSOPS2000)																											
Question source	New																											
Question history	None																											
Cognitive level	Higher*																											
10 CFR 55	41.4, 41.10																											
Comments	* Justification for Higher Cognitive categorization: Part (1) of each answer choice requires the examinee to recognize the 10 Bus / 20 Bus alignments that must exist with Unit 1 shutdown and Unit 2 operating.																											

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

17

ID: 1098425

Points: 1.00

Unit 1 has been operating at 100% power (steady) for 30 days, with the following:

- Reactor pressure is reading 1044.5 psig on DEHC HMI display

Reactor pressure rises to 1050 psig (unexplained rise on DEHC HMI) and stabilizes there.

WHICH ONE of the following DEHC HMI display indications could be associated with this event?

- A. Throttle Pressure reading 985 psig
- B. Pressure Set reading 955 psig
- C. All CV positions reading 46%
- D. All BPV positions reading 10%

Answer: C

Answer Explanation

Implication of the stem conditions indicating that the Unit has been operating at 100%, steady-state for 30 days: that operators have long-ago completed the "Power Ascension to Rated Power" actions of GP-2, Section 3.5.67 (refer to that procedure section). Initially (before the unexplained pressure rise), then, a reactor pressure reading of 1044.5 psig is not only "normal" but also within the band specified by Step 3.5.67.1. Per 3.5.67.2, Unit 1 average turbine control valve (CV) positions must be $\geq 50\%$ open. Per 3.5.64, Unit 1 Pressure Set must be between 955 psig and 970 psig with the plant operating at 100% power; it is actually set at 955 psig. Examinee is expected to recognize that a "normal" Throttle Pressure (i.e., PAM pressure) with a 955 psig Pressure Set when operating at rated power conditions is approximately 985 psig (assuming an approximate reactor pressure of 1044-1045 psig).

'C' is correct: All CV positions reading 46%. The Unit 1 CV's are not throttled open as far they should be ($\geq 50\%$, as already discussed). For whatever reason they may have throttled partially closed, the result will be a rise in reactor pressure.

'A' is wrong: Throttle Pressure reading 985 psig. As described above, this is a "normal" throttle pressure given the stem conditions. Plausible to the examinee who fails to recognize this fact.

'B' is wrong: Pressure Set reading 955 psig. Not only is a Pressure Set of 955 psig within the required band of GP-2, step 3.5.64, it is in fact the normal setting. As such, the CV positions would be reading something greater than their normal positions (i.e., something $>50\%$ open), resulting in reactor pressure drop, not rise. Plausible to the examinee who doesn't comprehend the relationship between Pressure Set and CV response as a result of a change in Pressure Set.

'D' is wrong: All BPV positions reading 10%. If the system/plant were behaving normally (i.e., plant conditions before the pressure rise event), all 9 turbine bypass valves (BPVs) would be fully closed (reading 0% open). Per GP-2, step 3.5.67.8, the Unit 1 CVs should never be more than about 58% open (which is well short of their 100% open position). What this means is that, assuming that the CVs themselves are not the direct cause of the reactor pressure rise, a 5 psig rise in reactor pressure would require the CVs to throttle open just a few percent more (if that). There would not be the need for the Bypass Control Unit to develop a signal to open the BPVs. Plausible to the examinee who has a weak comprehension of the relationship between the Pressure Control Unit and the Bypass Control Unit of EHC.

EXAMINATION ANSWER KEY

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Question 17 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	4
Difficulty:	2.50
System ID:	1098425
User-Defined ID:	REV 00, 11/17/14
Cross Reference Number:	NONE
Topic:	Recognize MCR indication associated with unexplained rise in RPV pressure
Num Field 1:	4.6
Num Field 2:	4.3
Text Field:	295007 2.1.31
Comments:	<div> <div>Level</div> <div>Tier</div> <div>Group</div> <div>KA # and Rating</div> <div>KA Statement</div> <div>References</div> <div>Examinee</div> <div>References</div> <div>Learning</div> <div>Objective</div> <div>Question source</div> <div>Question history</div> <div>Cognitive level</div> <div>10 CFR 55</div> <div>Comments</div> <div>RO</div> <div>1</div> <div>2</div> <div>295007 2.1.31 (4.6/4.3)</div> <div>295007 High Reactor Pressure</div> <div>2.1.31 Ability to locate control room switches, controls, and indications, and to determine that they correctly reflect the desired plant lineup.</div> <div>GP-2, Rev.153</div> <div>None</div> <div>No specified objective</div> <div>New</div> <div>None</div> <div>Higher</div> <div>41.5, 41.7, 41.10</div> <div>None</div> </div>

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

18

ID: 1098446

Points: 1.00

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

- Drywell pressure is indicating 0.5 psig, up slow (~ 0.1 psig every 5 minutes)

Operators enter OT-101 (High Drywell Pressure) and observe the following in the MCR:

- 2A Recirc Pump seal pressures read 1035 psig / 520 psig (#1 / #2, respectively)
- 2B Recirc Pump seal pressures read 1030 psig / 510 psig (#1 / #2, respectively)
- 2A DWCW Pump - Green light ON, Red light OFF
- 2B DWCW Pump - Green light OFF, Red light ON
- SV-59-128A, Inst Gas 'A' - Green light ON, Red light OFF
- SV-59-128B, Inst Gas 'B' - Green light ON, Red light OFF
- N2 Purge Flow reads 0 SCFM
- N2 Makeup Flow reads 0 SCFM

WHICH ONE of the following OT-101 mitigation strategies is required?

- A. Attachment 1 - Recirc Pump Seals
- B. Attachment 2 - Instrument Air Backing Up Instrument Gas
- C. Attachment 3 - Loss of Drywell Cooling
- D. Attachment 4 - Unidentified or RWCU Cause of Rising Drywell Pressure

Answer: C

Answer Explanation

Per OT-101, step 3.2, operators will diagnose the source of the drywell pressure trend. For the sake of these stem conditions, the following key plant parameters are considered in step 3.2: Recirc Pump seal pressures; and Drywell Chill Water (DWCW) system operation. Once the source of the problem has been determined, step 3.3 directs operators to execute the appropriate Attachment. There are 4 such Attachments: Attachment 1 mitigates the problem of failed Recirc Pump seals; Attachment 2 mitigates the problem of Instrument Air being introduced into the otherwise inerted drywell via the Instrument Gas headers; Attachment 3 mitigates the problem of a loss of drywell cooling; Attachment 4 mitigates the problem of either RWCU leakage into the drywell, or of having determined that the source is unknown.

Consider the MCR indications given in the stem:

- The seal pressures for both Recirc Pumps are reading "normal" for rated power conditions (i.e., #1 pressure is approximately RPV pressure, #2 pressure is approximately one-half of RPV pressure)
- Both normally-closed block valves that connect Instrument Air to the Instrument Gas system are indicating CLOSED (i.e., Green light ON, Red light OFF)
- Nitrogen flows (both Purge and Makeup) to the Primary Containment are both indicating 0 scfm (i.e., no valve leakage and/or flow controller malfunction is causing an unintentional de-inerting of the containment)
- However, the 2A DWCW (Circ) Pump is not running (Green light ON, Red light OFF); this is

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

indicative of a partial loss of drywell cooling (i.e., normally, both pumps are running in order to maintain a "normal", rated power, drywell temperature (and therefore drywell pressure))

'C' is correct: Attachment 3 - Loss of Drywell Cooling. This is the mitigation strategy that satisfies the direction given by OT-101, step 3.3.

'A' is wrong: Attachment 1 - Recirc Pump Seals. Plausible to the examinee who cannot effectively diagnose seal failures given the seal pressures.

'B' is wrong: Attachment 2 - Instrument Air Backing Up Instrument Gas. As discussed above, there is no indication (in the stem) that Instrument Air is leaking into the drywell. Plausible to the examinee who doesn't comprehend the significance of the given N2 flows (i.e., that these same recorder points, normally used for monitoring nitrogen flow into the primary containment, are also used to monitor Instrument Air flow into the containment when required, such as when de-inerting the containment).

'D' is wrong: Attachment 4 - Unidentified or RWCU Cause of Rising Drywell Pressure. Because operators have in fact determined the source of the drywell pressure trend (i.e., some loss of drywell cooling), employing Attachment 4 is not required. Additionally, there is no stem information regarding the status of RWCU; therefore, neither would they be required to execute Attachment 4 to mitigate an RWCU leak into the drywell.

Question 18 Info		
Question Type:	Multiple Choice	
Status:	Active	
Always select on test?	No	
Authorized for practice?	No	
Points:	1.00	
Time to Complete:	4	
Difficulty:	2.50	
System ID:	1098446	
User-Defined ID:	REV 00, 11/17/14	
Cross Reference Number:	LGSOPS1540.3	
Topic:	Determine required OT-101 strategy for an upward trend of drywell pressure	
Num Field 1:	3.2	
Num Field 2:	3.4	
Text Field:	295010 AK1.03	
Comments:	<div> <div>Level</div> <div>Tier</div> <div>Group</div> <div>KA # and Rating</div> <div>KA Statement</div> <div>References</div> <div>Examinee</div> <div>References</div> <div>Learning</div> <div>Objective</div> <div>Question source</div> <div>Question history</div> <div>RO</div> <div>1</div> <div>2</div> <div>295010 AK1.03 (3.2/3.4)</div> <div>295010 High Drywell Pressure</div> <div>Knowledge of the operational implications of the following concepts as they apply to HIGH DRYWELL PRESSURE: AK1.03</div> <div>Temperature increases</div> <div>OT-101, Rev.35</div> <div>None</div> <div>LGSOPS1540.3</div> <div>New</div> <div>None</div> </div>	

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

	Cognitive level	Higher
	10 CFR 55	41.10
	Comments	None

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

19

ID: 1098470

Points: 1.00

Unit 1 plant conditions:

- RPV water level is -150", steady
- Core Spray is maintaining RPV water level
- LPCI 'A' Injection Valve is overridden CLOSED (P-T-L)
- RHR 'B' is operating in Drywell Spray
- Suppression Pool level is 30 feet

PRO is directed to lower Suppression Pool level using T-233 (RHR to Radwaste).

WHICH ONE of the following describes an action that the PRO performs in the MCR to complete this task?

- A. OPEN the RHR 'A' HX Inlet (Outlet) Valves, F047A (F003A)
- B. START 'A' or 'C' RHRSW Pump
- C. Re-align Drywell Sprays to RHR 'A'
- D. START 'B' or 'D' RHRSW Pump

Answer: B

Answer Explanation

Refer to T-233 (its use being directed from T-102 (Primary Containment Control, Step SP/L-11)...Only RHR 'A' is capable of being aligned to Radwaste in order to reduce Suppression Pool water level. Reviewing the actions of Section 4.0, we discover the following (with respect only to the answer choices for this question):

Step 4.1 is a MCR action but is not required because the RHR 'A' HX Inlet (Outlet) Valves are already open (normally-open valves), and nothing in the stem conditions indicates any reason why operators would have been directed to close them before the CRS directed this evolution.

Step 4.4 is a MCR action and will have to be performed. The RHRSW Pumps have no auto-start features; therefore, they did not auto-start in response to the -129" LOCA signal. MCR operators will have to place either the 'A' or 'C' RHRSW Pump in service.

Step 4.5 is a MCR action but is not required because the 'A' RHR Pump is already running...it auto-started on the -129" LOCA signal. The fact that operators have overridden CLOSED (Pull-To-Lock) its associated LPCI Injection Valve (F017A) indicates that the RHR 'A' Pump is still running (on min flow).

'B' is correct: START 'A' or 'C' RHRSW Pump. Correct for the reasons described above.

'A' is wrong: OPEN the RHR 'A' HX Inlet (Outlet) Valves, F047A (F003A). Plausible to the examinee who forgets that these are normally-open valves or who believes that one or both have auto-closed in response to the LOCA signal.

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

'C' is wrong: Re-align Drywell Sprays to RHR 'A'. Plausible to the examinee who cannot recall whether T-233 uses RHR 'A' exclusively (it does) or rather RHR 'B' exclusively (it doesn't). That examinee believes it to be RHR 'B'. Recognizing that RHR 'B' is currently spraying the drywell, the operator would have to swap drywell sprays over to RHR 'A'.

'D' is wrong: START 'B' or 'D' RHRSW Pump. Plausible for reasons similar to those of choice 'C'. In this case, however, the examinee also forgets that one of the 'B' Loop RHRSW pumps was already started when RHR 'B' was placed in drywell sprays.

Question 19 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	3
Difficulty:	2.00
System ID:	1098470
User-Defined ID:	REV 00, 11/17/14
Cross Reference Number:	LLOT0051.IL10
Topic:	Determine actions to lower Supp Pool level with LOCA signal present using T-233
Num Field 1:	2.9
Num Field 2:	3.0
Text Field:	295029 EA1.03
Comments:	<div> <div>Level</div> <div>Tier</div> <div>Group</div> <div>KA # and Rating</div> <div>KA Statement</div> <div>References</div> <div>Examinee</div> <div>References</div> <div>Learning</div> <div>Objective</div> <div>Question source</div> <div>Question history</div> <div>Cognitive level</div> <div>10 CFR 55</div> <div>Comments</div> <div>RO</div> <div>1</div> <div>2</div> <div>295029 EA1.03 (2.9/3.0)</div> <div>295029 High Suppression Pool Water Level Ability to operate and/or monitor the following as they apply to HIGH SUPPRESSION POOL WATER LEVEL: EA1.03 RHR/LPCI</div> <div>T-102, Rev.24 T-225 U/1, Rev.22 T-233 U/1, Rev.14</div> <div>None</div> <div>LLOT0051.IL10</div> <div>New</div> <div>None</div> <div>Higher</div> <div>41.7, 41.10</div> <div>None</div> </div>

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

20

ID: 1098495

Points: 1.00

Unit 1 plant conditions:

- HPCI Pump Room temperature is 170°F
- RCIC Pump Room temperature is 150°F
- 1A/1C RHR Pump Room temperature is 160°F
- 1B/1D RHR Pump Room temperature is 150°F

WHICH ONE of the following identifies **ALL** of the systems/subsystems (from the above list) that are available by procedure for safe shutdown of the plant?

- A. RCIC
- B. RCIC
1A/1C RHR
- C. 1A/1C RHR
1B/1D RHR
- D. HPCI
RCIC

Answer: D

Answer Explanation

Refer to T-103 (Secondary Containment Control), Table SCC-2 (Max Safe Operating (MSO) Temperature Values). HPCI MSO is 176°F; RCIC MSO is 155°F; 1A/1C RHR and 1B/1D RHR MSO's are 140°F. The stem conditions indicate that the following systems/subsystems are BELOW their MSO temperatures: HPCI and RCIC. Per the T-103 Bases, page 4 of 32..."The MSO, as used in T-103, is defined as the highest value of a parameter at which neither (1) equipment necessary for the safe shutdown of the plant will fail, nor (2) personnel access necessary for the safe shutdown of the plant will be precluded."

'D' is correct: HPCI, RCIC. Among the 4 given systems/subsystems, only HPCI and RCIC are below MSO and are, therefore, available for safe shutdown of the plant.

'A', 'B', 'C' are wrong. Each of these choices suggest one or more systems/subsystems for which the temperature is ABOVE the MSO; therefore, the system(s) is/are NOT available for safe shutdown of the plant.

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

Question 20 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	3
Difficulty:	3.00
System ID:	1098495
User-Defined ID:	REV 00, 11/17/14
Cross Reference Number:	LLOT1560.5
Topic:	Given T-103 temperatures, identify systems that are available for safe shutdown of the plant
Num Field 1:	3.3
Num Field 2:	3.5
Text Field:	295032 EA2.02
Comments:	<div> <div>Level</div> <div>RO</div> <div>Tier</div> <div>1</div> <div>Group</div> <div>2</div> <div>KA # and Rating</div> <div>295032 EA2.02 (3.3/3.5)</div> <div>KA Statement</div> <div>295032 High Secondary Containment Area Temperature</div> <div>Ability to determine and/or interpret the following as they apply to HIGH SECONDARY CONTAINMENT AREA TEMPERATURE: EA2.02 Equipment operability</div> <div>References</div> <div>T-103, Rev.20</div> <div>Examinee</div> <div>None</div> <div>References</div> <div>Learning</div> <div>LLOT1560.5</div> <div>Objective</div> <div>Question source</div> <div>New</div> <div>Question history</div> <div>None</div> <div>Cognitive level</div> <div>Lower</div> <div>10 CFR 55</div> <div>41.7, 41.10</div> <div>Comments</div> <div>None</div> </div>

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

21

ID: 1098544

Points: 1.00

Unit 1 plant startup is in progress.

All IRMs are on Range 3 with the following indications:

A - 80/125
B - 72/125
C - 78/125
D - 124/125
E - 75/125
F - 83/125
G - 122/125
H - 74/125

WHICH ONE of the following describes the plant response?

- A. Rod withdraw block, only
- B. Rod withdraw block and RPS 'A' half-scam
- C. Rod withdraw block and RPS 'B' half-scam
- D. Rod withdraw block and full scram

Answer: D

Answer Explanation

Use alarm response card ARC-MCR-107, F3 to validate the following: IRM Upscale rod block setpoint is 85/125 of scale on any one of the 8 IRM channels. Use ARC-MCR-107, H3 to validate the following: IRM Upscale trip (RPS actuation) setpoint is 120/125 of scale. IRMs A, C, E, and G input to RPS Trip System 'A'; IRMs B, D, F, and H input to RPS Trip System 'B'. IRM trips are enabled so long as the Reactor Mode Switch is NOT in RUN.

'D' is correct: Rod withdraw block and full scram. Channel 'D' is above 120/125; therefore RPS 'B' actuates. Channel 'G' is above 120/125; therefore RPS 'A' actuates. A full scram results. It's not possible to actuate RPS (at 120/125 scale) without also generating a rod block (at 85/125 scale).

'A' is wrong: Rod withdraw block, only. Plausible to the examinee who doesn't recall the IRM Upscale Trip (RPS) setpoint of 120/125 scale.

'B' is wrong: Rod withdraw block and RPS 'A' half-scam. Plausible to the examinee who fails to recognize that the two IRMs that are above 120/125 scale ('D' and 'G') are associated with opposite sides of RPS.

'C' is wrong: Rod withdraw block and RPS 'B' half-scam. Plausible for the same reason as for choice 'B'.

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

Question 21 Info																												
Question Type:	Multiple Choice																											
Status:	Active																											
Always select on test?	No																											
Authorized for practice?	No																											
Points:	1.00																											
Time to Complete:	3																											
Difficulty:	2.00																											
System ID:	1098544																											
User-Defined ID:	REV 00, 11/17/14																											
Cross Reference Number:	LLOT0071																											
Topic:	Recall IRM Scrams																											
Num Field 1:	3.7																											
Num Field 2:	3.6																											
Text Field:	215003 A3.03																											
Comments:	<table><tr><td>Level</td><td>RO</td></tr><tr><td>Tier</td><td>2</td></tr><tr><td>Group</td><td>1</td></tr><tr><td>KA # and Rating</td><td>215003 A3.03 (3.7/3.6)</td></tr><tr><td>KA Statement</td><td>215003 IRM A3.03 Ability to monitor automatic operations of the INTERMEDIATE RANGE MONITOR (IRM) SYSTEM including: A3.03 RPS status</td></tr><tr><td>References</td><td>ARC-MCR-107, F3, Rev.1 ARC-MCR-107, H3, Rev.0</td></tr><tr><td>Examinee References</td><td>None</td></tr><tr><td>Learning Objective</td><td>LLOT0071</td></tr><tr><td>Question source</td><td>MODIFIED Bank 560453: revised correct answer and revised or replaced distractors to improve plausibility (not possible to get any form of scram (half or full) without also getting a rod block</td></tr><tr><td>Question history</td><td>None</td></tr><tr><td>Cognitive level</td><td>Lower</td></tr><tr><td>10 CFR 55</td><td>41.7</td></tr><tr><td>Comments</td><td>None</td></tr></table>		Level	RO	Tier	2	Group	1	KA # and Rating	215003 A3.03 (3.7/3.6)	KA Statement	215003 IRM A3.03 Ability to monitor automatic operations of the INTERMEDIATE RANGE MONITOR (IRM) SYSTEM including: A3.03 RPS status	References	ARC-MCR-107, F3, Rev.1 ARC-MCR-107, H3, Rev.0	Examinee References	None	Learning Objective	LLOT0071	Question source	MODIFIED Bank 560453: revised correct answer and revised or replaced distractors to improve plausibility (not possible to get any form of scram (half or full) without also getting a rod block	Question history	None	Cognitive level	Lower	10 CFR 55	41.7	Comments	None
Level	RO																											
Tier	2																											
Group	1																											
KA # and Rating	215003 A3.03 (3.7/3.6)																											
KA Statement	215003 IRM A3.03 Ability to monitor automatic operations of the INTERMEDIATE RANGE MONITOR (IRM) SYSTEM including: A3.03 RPS status																											
References	ARC-MCR-107, F3, Rev.1 ARC-MCR-107, H3, Rev.0																											
Examinee References	None																											
Learning Objective	LLOT0071																											
Question source	MODIFIED Bank 560453: revised correct answer and revised or replaced distractors to improve plausibility (not possible to get any form of scram (half or full) without also getting a rod block																											
Question history	None																											
Cognitive level	Lower																											
10 CFR 55	41.7																											
Comments	None																											

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

22

ID: 1098605

Points: 1.00

Unit 1 is shut down.

The PRO is using RCIC in Pressure Control Mode to maintain RPV pressure in an assigned band of 800-900 psig:

- RCIC Flow Controller is in AUTO; its OUTPUT signal is 50%

RPV pressure is 850 psig, steady, when the following occurs:

- RCIC Flow Controller OUTPUT signal fails UPSCALE

WHICH ONE of the following describes an automatic plant/system the response?

- A. RPV pressure rises
- B. RPV pressure lowers
- C. CST level lowers
- D. CST level rises

Answer: B

Answer Explanation

RCIC is placed in Pressure Control mode using S49.7.A, section 4.3.

Before the Flow Controller failure, RPV pressure is being held constant at 850 psig as a result of the following "balance"...

- RCIC Pump is recircing water to/from the CST at some constant flow rate (gpm)
- Because RCIC water has no other flow path that to/from the CST, the CST level is being held constant at some level (feet)
- A constant controller Output signal of 50% is maintaining the RCIC turbine at some constant speed (rpm)
- A constant amount (Mlbm/hr) of reactor steam is being demanded by the RCIC turbine governor in order to maintain the constant turbine speed
- HV-49-1F022 (RCIC Full Flow Test Valve) is throttled to some constant position, maintaining some constant amount of resistance to RCIC (CST water) flow

When the Flow Controller OUTPUT fails to 100%, the following results...

- 1F022 position remains unchanged, continuing to resist RCIC (CST water) flow the same amount as before
- The controller sends a significantly higher value (mA) signal to the turbine governor system which correspondingly admits more reactor pressure into the steam chest in order to speed up the turbine
- This demand for more reactor steam causes RPV pressure to LOWER
- Of course, the rate (gpm) at which the RCIC Pump recircs CST water is greater than before the failure; however, for the same reason as before, CST level remains unchanged

'B' is correct: RPV pressure lowers. Correct for the reasons described above.

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

'A' is wrong: RPV pressure rises. Plausible (historically, known to be) to the examinee who lacks a solid GFE comprehension of the steam cycle/fluid flow; also plausible to the examinee who has a similarly weak comprehension of "Controllers", particularly with respect to their OUTPUT signal.

'C' is wrong: CST level lowers. Plausible to the examinee who has a weak understanding of the RCIC Pressure Control flowpath; i.e., that the flowpath is nothing more than the Full-Flow Test flowpath used, for example, to perform Tech Spec required surveillance tests.

'D' is wrong: CST level rises. Plausible for reasons identical to that for choice 'C'.

Question 22 Info		
Question Type:	Multiple Choice	
Status:	Active	
Always select on test?	No	
Authorized for practice?	No	
Points:	1.00	
Time to Complete:	4	
Difficulty:	2.50	
System ID:	1098605	
User-Defined ID:	REV 00, 11/17/14	
Cross Reference Number:	LLOT0380.11B	
Topic:	Predict RPV pressure response to RCIC flow controller failure	
Num Field 1:	4.2	
Num Field 2:	4.2	
Text Field:	206000.A1.02	
Comments:	<div> <div>Level</div> <div>RO</div> </div> <div> <div>Tier</div> <div>2</div> </div> <div> <div>Group</div> <div>1</div> </div> <div> <div>KA # and Rating</div> <div>217000 K3.02 (3.6/3.6)</div> </div> <div> <div>KA Statement</div> <div>217000 RCIC Knowledge of the effect that a loss or malfunction of the REACTOR CORE ISOLATION COOLING SYSTEM (RCIC) will have on following: K3.02 Reactor vessel pressure</div> </div> <div> <div>References</div> <div>S49.7.A, Rev.11</div> </div> <div> <div>Examinee</div> <div>None</div> </div> <div> <div>References</div> <div></div> </div> <div> <div>Learning</div> <div>LLOT0380.11B</div> </div> <div> <div>Objective</div> <div></div> </div> <div> <div>Question source</div> <div>New</div> </div> <div> <div>Question history</div> <div>None</div> </div> <div> <div>Cognitive level</div> <div>Higher</div> </div> <div> <div>10 CFR 55</div> <div>41.7, 41.10</div> </div> <div> <div>Comments</div> <div>None</div> </div>	

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

23

ID: 1098611

Points: 1.00

Unit 1 is operating at 100% power.

D13 DG monthly run is in progress with the D/G running:

- DG frequency is 59.5 Hz
- DG voltage is 4278 Volts with the output breaker OPEN

101 Safeguard Transformer lockout occurs.

CRS directs placing D13 DG in parallel with the 201 Safeguard Bus and loading the DG to 2000 KW.

WHICH ONE of the following identifies the INCOMING source to the D13 Bus and the proper direction of the synchroscope for synchronizing?

	<u>INCOMING SOURCE</u>	<u>SYNCHROSCOPE DIRECTION</u>
A.	201 Bus	Clockwise
B.	201 Bus	Counterclockwise
C.	D13 DG	Clockwise
D.	D13 DG	Counterclockwise

Answer: B

Answer Explanation

With the D13 DG already running at speed when the 101-D13 breaker trips due to the 101 Safeguard Transformer lockout, the D13 DG output breaker will auto close 0.5 seconds after D13 Bus volts drops below 40%. This timing sequence is faster than the Dead Bus Transfer to the 201 source which occurs after a 1 second time delay. With the DG supplying the bus during synchronizing operations, the INCOMING source will be the 201 Bus and the DG will be the RUNNING source. When paralleling in this manner, the proper synchroscope operation is in the counter-clockwise direction (SLOW in the "SLOW" direction) since the DG should always operate faster than the offsite source to prevent motoring the DG. Since the synchroscope shows the relative speed difference between the INCOMING compared with the RUNNING, the synchroscope will show the INCOMING to be running slower which is the counter-clockwise direction. The procedural direction for this is found in S92.2.N, Section 4.5.

'B' is correct: 201 Bus; Counter-clockwise. Correct for the reasons described above.

'A' is wrong: 201 Bus; Clockwise. Plausible to the examinee (a fairly commonly demonstrated weakness) who fails to recognize the offsite power-to-running DG relationship (i.e., INCOMING-to-RUNNING) described above. Inexperienced examinees are accustomed to thinking in terms of synchscopes rotating "Slow in the Fast" direction; that mindset often works against them when confronted the "reverse" type of relationship depicted in the question.

'C' is wrong: D13 DG; Clockwise. Plausible for similar reasons as that for choice 'A'.

'D' is wrong: D13 DG; Counter-clockwise. Plausible for similar reasons as that for choices 'A' and 'C'.

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

Question 23 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	4
Difficulty:	2.50
System ID:	1098611
User-Defined ID:	REV 00, 11/17/14
Cross Reference Number:	LGSOPS0092B.IL12
Topic:	Recognize Incoming-Running power source relationship and determine how to parallel those sources
Num Field 1:	3.1
Num Field 2:	3.4
Text Field:	262001 K5.01
Comments:	<div> <div>Level</div> <div>Tier</div> <div>Group</div> <div>KA # and Rating</div> <div>KA Statement</div> <div>References</div> <div>Examinee</div> <div>References</div> <div>Learning</div> <div>Objective</div> <div>Question source</div> <div>Question history</div> <div>Cognitive level</div> <div>10 CFR 55</div> <div>Comments</div> <div>RO</div> <div>2</div> <div>1</div> <div>262001 K5.01 (3.1/3.4)</div> <div>262001 AC Electrical Distribution Knowledge of the operational implications of the following concepts as they apply to A.C. ELECTRICAL DISTRIBUTION: K5.01 Principle involved with paralleling two A.C. sources</div> <div>S92.2.N, Rev.34</div> <div>None</div> <div>LGSOPS0092B.IL12</div> <div>Bank 742515</div> <div>None</div> <div>Higher</div> <div>41.5</div> <div>None</div> </div>

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

24

ID: 1109928

Points: 1.00

Unit 1 is operating at 100% power.

Operators are preparing to perform ST-6-076-250-1 (SGTS and RERS Flow Test).

WHICH ONE of the following describes the performance of this ST?

- A. Uses HVAC ISOLATION 'A' and 'B' pushbuttons to simultaneously start both STGS trains
- B. Starts one SGTS fan at a time with flow through only one Carbon Filter
- C. Starts one SGTS fan with both RERS fans at the same time
- D. Tests SGTS separately from RERS

Answer: B

Answer Explanation

A review of ST-6-076-250-1 reveals the following:

- Section 4.4 starts only SGTS 'A' fan along with only RERS 'A' fan
- Section 4.5 does the same, except it tests only the 'B' fan for each system
- Sections 4.6 and 4.7 test only one SGTS train at a time, with its suction from the refuel floor

'B' is correct: Starts one SGTS fan at a time with flow through only one Carbon Filter. Correct for the reasons described above.

'A' is wrong: Uses HVAC ISOLATION 'A' and 'B' pushbuttons to simultaneously start both STGS trains. Plausible to examine who is not familiar with this ST, explicitly, and so concludes that the ST would be conducted with SGTS in its "normal" automatic initiation alignment (i.e., with both SGTS trains in AUTO).

'C' is wrong: Starts one SGTS fan with both RERS fans at the same time. The relationship between SGTS and RERS is an often misunderstood concept among inexperienced licensed operator candidates; plausible for this reason.

'D' is wrong: Tests SGTS separately from RERS. The relationship between SGTS and RERS is an often misunderstood concept among inexperienced licensed operator candidates; plausible for this reason.

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

Question 24 Info																																
Question Type:	Multiple Choice																															
Status:	Active																															
Always select on test?	No																															
Authorized for practice?	No																															
Points:	1.00																															
Time to Complete:	3																															
Difficulty:	2.00																															
System ID:	1109928																															
User-Defined ID:	REV 00, 11/17/14																															
Cross Reference Number:	NONE																															
Topic:	Recall SGTS Tech Spec Surveillance Method																															
Num Field 1:	3.7																															
Num Field 2:	4.1																															
Text Field:	261000 2.2.12																															
Comments:	<table><tr><td>Level</td><td>RO</td></tr><tr><td>Tier</td><td>2</td></tr><tr><td>Group</td><td>1</td></tr><tr><td>KA # and Rating</td><td>261000 2.2.12 (3.7/4.1)</td></tr><tr><td>KA Statement</td><td>261000 SGTS 2.2.12 Knowledge of surveillance procedures.</td></tr><tr><td>References</td><td>ST-6-076-250-1, Rev.48</td></tr><tr><td>Examinee</td><td>None</td></tr><tr><td>References</td><td></td></tr><tr><td>Learning</td><td>No specified objective</td></tr><tr><td>Objective</td><td></td></tr><tr><td>Question source</td><td>New</td></tr><tr><td>Question history</td><td>None</td></tr><tr><td>Cognitive level</td><td>Lower</td></tr><tr><td>10 CFR 55</td><td>41.10</td></tr><tr><td>Comments</td><td>None</td></tr></table>		Level	RO	Tier	2	Group	1	KA # and Rating	261000 2.2.12 (3.7/4.1)	KA Statement	261000 SGTS 2.2.12 Knowledge of surveillance procedures.	References	ST-6-076-250-1, Rev.48	Examinee	None	References		Learning	No specified objective	Objective		Question source	New	Question history	None	Cognitive level	Lower	10 CFR 55	41.10	Comments	None
Level	RO																															
Tier	2																															
Group	1																															
KA # and Rating	261000 2.2.12 (3.7/4.1)																															
KA Statement	261000 SGTS 2.2.12 Knowledge of surveillance procedures.																															
References	ST-6-076-250-1, Rev.48																															
Examinee	None																															
References																																
Learning	No specified objective																															
Objective																																
Question source	New																															
Question history	None																															
Cognitive level	Lower																															
10 CFR 55	41.10																															
Comments	None																															

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

25

ID: 1110346

Points: 1.00

Unit 1 is operating at 100% power when the following occurs:

- Main turbine trip
- An ATWS occurs

RPV pressure rapidly rises.

No SRVs open until RPV pressure reaches 1190 psig.

WHICH ONE of the following identifies the **MINIMUM** number of SRVs that have failed?

- A. 4
- B. 5
- C. 9
- D. 10

Answer: C

Answer Explanation

There are 14 SRVs; their "safety" relief pressures are:

1170 psig - SRVs H, J, L, N (a group of 4)

1180 psig - SRVs D, E, K, M, S (a group of 5)

1190 psig - SRVs A, B, C, F, G (a group of 5)

Stem indicates that no SRVs open until pressure reaches 1190 psig; therefore, the first group of 4 have failed (they should have opened at 1170 psig) and the second group of 5 have failed (they should have opened at 1180 psig). All total, a minimum of 9 SRVs failed to open.

'C' is correct: 9. Correct for the reasons described above.

'A' is wrong: 4. This Exam Author has discovered that the SRV lift setpoints and the number of SRVs in each lift setpoint group is a general weakness among ILT Candidates. As such, this choice is plausible to the examinee who incorrectly recalls the setpoints as being (in sequence): 1180, 1190, 1200 psig.

'B' is wrong: 5. Plausible for reasons similar to that for choice 'A'. In this case, the examinee also incorrectly recalls the "order" of the groups; i.e.: 5 + 4 + 4.

'D' is wrong: 10. Plausible for reasons similar to that for choices 'A' and 'B'.

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

Question 25 Info		
Question Type:	Multiple Choice	
Status:	Active	
Always select on test?	No	
Authorized for practice?	No	
Points:	1.00	
Time to Complete:	3	
Difficulty:	2.50	
System ID:	1110346	
User-Defined ID:	REV 00, 11/17/14	
Cross Reference Number:	LGSOPS0001B.IL2B	
Topic:	Recall SRV safety/relief lift setpoints	
Num Field 1:	4.2	
Num Field 2:	4.4	
Text Field:	239002 K3.02	
Comments:	<div> <div>Level</div> <div>RO</div> </div> <div> <div>Tier</div> <div>2</div> </div> <div> <div>Group</div> <div>1</div> </div> <div> <div>KA # and Rating</div> <div>239002 K3.02 (4.2/4.4)</div> </div> <div> <div>KA Statement</div> <div> 239002 SRVs Knowledge of the effect that a loss or malfunction of the RELIEF/SAFETY VALVES will have on following: K3.02 Reactor over pressurization </div> </div> <div> <div>References</div> <div> LGSOPS0001B, Main Steam / Pressure Relief lesson plan </div> </div> <div> <div>Examinee</div> <div>None</div> </div> <div> <div>References</div> <div></div> </div> <div> <div>Learning</div> <div>LGSOPS0001B.IL2B</div> </div> <div> <div>Objective</div> <div></div> </div> <div> <div>Question source</div> <div>New</div> </div> <div> <div>Question history</div> <div>None</div> </div> <div> <div>Cognitive level</div> <div>Lower</div> </div> <div> <div>10 CFR 55</div> <div>41.7</div> </div> <div> <div>Comments</div> <div>None</div> </div>	

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

26

ID: 1102330

Points: 1.00

Unit 2 reactor startup is in progress, with the following:

- All IRMs are on Range 4
- All SRMs are reading 600 CPS
- Rod withdrawals are in progress

An RPV instrument dry tube cracks and fills with water; as a result:

- Interior of SRM 'C' detector fills with water

WHICH ONE of the following identifies the SRM 'C' recorder and RMCS Rod Block response?

	<u>SRM 'C' recorder</u>	<u>RMCS Rod Block</u>
A.	Fails UPSCALE	Yes
B.	Fails UPSCALE	No
C.	Fails DOWNSCALE	Yes
D.	Fails DOWNSCALE	No

Answer: A

Answer Explanation

Per BWR Generic Fundamentals (GFE) lesson plan for "Sensors & Detectors", learning objective #24, the "wetting" of a fission chamber detector causes the detector to fail HIGH (recorder fails UPSCALE). The SRM Upscale ($>1 \times 10^5$ CPS) Rod Block is enabled so long as its associated IRMs are below Range 8. block).

'A' is correct: Fails UPSCALE; Yes. Correct for the reasons described above. All IRMs are on Range 4, so the Upscale rod block function is enabled.

'B' is wrong: Fails UPSCALE; No. Plausible to the examinee who fails to recall the SRM Upscale rod block or who mistakenly believes the Upscale rod block is bypassed with IRMs on Range 4.

'C' is wrong: Fails DOWNSCALE; Yes. Plausible to the examinee who doesn't recall the GFE knowledge regarding the failure modes for fission chamber detectors. That examinee believes the detector (and therefore the recorder) fails downscale, and as such results in an SRM DOWNSCALE (<3 CPS) Rod Block.

'D' is wrong: Fails DOWNSCALE; No. First part is plausible for the same reason as for choice 'C'. The second part is plausible to the examinee who either confuses the SRM DOWNSCALE rod block function (which is NOT dependent on the IRM Range) with the SRM NOT FULL INSERTED AND <100 CPS rod block function (which IS bypassed when the IRMs are on Range 3 or higher), or who simply believes that the SRM downscale rod block function is bypassed with the IRMs on Range 4.

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

Question 26 Info																												
Question Type:	Multiple Choice																											
Status:	Active																											
Always select on test?	No																											
Authorized for practice?	No																											
Points:	1.00																											
Time to Complete:	4																											
Difficulty:	3.00																											
System ID:	1102330																											
User-Defined ID:	REV 00, 11/17/14																											
Cross Reference Number:	LGSOPS0074.IL6																											
Topic:	Predict SRM and RMCS response to SRM detector wetting																											
Num Field 1:	2.9																											
Num Field 2:	2.9																											
Text Field:	215004 K6.04																											
Comments:	<table><tr><td>Level</td><td>RO</td></tr><tr><td>Tier</td><td>2</td></tr><tr><td>Group</td><td>1</td></tr><tr><td>KA # and Rating</td><td>215004 K6.04 (2.9/2.9)</td></tr><tr><td>KA Statement</td><td>215004 SRMs Knowledge of the effect that a loss or malfunction of the following will have on the SOURCE RANGE MONITOR (SRM) SYSTEM: K6.04 Detectors</td></tr><tr><td>References</td><td>ARC-MCR-107, G4, Rev.0 ARC-MCR-107, H4, Rev.1 BWR Fundamentals Chapter 7 (Components), Rev.4</td></tr><tr><td>Examinee References</td><td>None</td></tr><tr><td>Learning Objective</td><td>LGSOPS0074.IL6</td></tr><tr><td>Question source</td><td>New</td></tr><tr><td>Question history</td><td>None</td></tr><tr><td>Cognitive level</td><td>Higher*</td></tr><tr><td>10 CFR 55</td><td>41.7</td></tr><tr><td>Comments</td><td>*Justification for HIGHER COGNITIVE categorization: First part requires comprehension of GFE "Components" theory regarding fission chamber "wetting".</td></tr></table>		Level	RO	Tier	2	Group	1	KA # and Rating	215004 K6.04 (2.9/2.9)	KA Statement	215004 SRMs Knowledge of the effect that a loss or malfunction of the following will have on the SOURCE RANGE MONITOR (SRM) SYSTEM: K6.04 Detectors	References	ARC-MCR-107, G4, Rev.0 ARC-MCR-107, H4, Rev.1 BWR Fundamentals Chapter 7 (Components), Rev.4	Examinee References	None	Learning Objective	LGSOPS0074.IL6	Question source	New	Question history	None	Cognitive level	Higher*	10 CFR 55	41.7	Comments	*Justification for HIGHER COGNITIVE categorization: First part requires comprehension of GFE "Components" theory regarding fission chamber "wetting".
Level	RO																											
Tier	2																											
Group	1																											
KA # and Rating	215004 K6.04 (2.9/2.9)																											
KA Statement	215004 SRMs Knowledge of the effect that a loss or malfunction of the following will have on the SOURCE RANGE MONITOR (SRM) SYSTEM: K6.04 Detectors																											
References	ARC-MCR-107, G4, Rev.0 ARC-MCR-107, H4, Rev.1 BWR Fundamentals Chapter 7 (Components), Rev.4																											
Examinee References	None																											
Learning Objective	LGSOPS0074.IL6																											
Question source	New																											
Question history	None																											
Cognitive level	Higher*																											
10 CFR 55	41.7																											
Comments	*Justification for HIGHER COGNITIVE categorization: First part requires comprehension of GFE "Components" theory regarding fission chamber "wetting".																											

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

27

ID: 1102331

Points: 1.00

Unit 1 plant heatup is in progress.

RPV pressure is 50 psig.

A electrical short causes the loss of all power from 1AY160.

WHICH ONE of the following identifies an automatic plant response?

- A. Both SGTS Exhaust Fans auto-start
- B. RPS half-scrum due to APRM INOP
- C. RBM 'A' Downscale Trip
- D. MAIN STEAM LINE HIGH-HIGH RADIATION alarm

Answer: D

Answer Explanation

Refer to 1S26.1.Q (COL), Alignment of the Main Steam Line Radiation Monitors for Normal Operations, Step 2, which shows that breaker 10AY160-02 feeds power (RPS UPS 120VAC) to "Rad Monitor Instrument Panel 10C606." That panel supplies power to Main Steam Line (MSL) Radiation Monitors 'A' and 'C'. Refer to alarm response card ACR-MCR-107, I1 (Main Steam Line High-High Radiation), specifically Cause #2..."detector inoperable"...this means that a loss of high voltage power (as in the case of a loss of 1AY160 UPS power) to a MSL Rad Monitor detector causes the Rad Monitor Channel to trip UPSCALE.

'D' is correct: MAIN STEAM LINE HIGH-HIGH RADIATION alarm. Correct for the reasons described above.

'A' is wrong: Both SGTS Exhaust Fans auto-start. Refer to Event procedure E-1AY160 (Loss of 1A RPS UPS Power), Confirming Indication 1.7, which shows that a loss of this UPS causes an auto-start of the 'A' SGTS Fan (only). Notice that Confirming Indications 1.9 and 1.10 show that all Reactor Enclosure Supply and Exhaust Fans trip. This choice is plausible to the examinee who recalls the trip of all R.E. fans and mistakenly translates this to a bondafide RE HVAC "isolation" condition; if it were (it is NOT), then that examinee would conclude that both SGTS trains auto-start.

'B' is wrong: RPS half-scrum due to APRM INOP. This choice is plausible to the examinee who confuses RPS UPS power (1AY160, 1BY160) with the 1AD185 (1BD185) UPSs that power the APRM channels. If either of those supplies (1AD185 or 1BD185) were lost, the result would be a trip of 2 of the 4 VOTER units, which would result in an RPS half-scrum due to an APRM INOP condition.

'C' is wrong: RBM 'A' Downscale Trip. Plausible to the examinee who fantly recall some association between RPS UPS power and the RBM channels; there is...RPS 'B' UPS power (1BY160) powers the RBM channel recorders on MCR panel 10C603. It is 1AD185 and 1BD185 UPS power that supplies the RBM channels, although RPS UPS power (1AY160, 1BY160) does provide backup power to the RBM channels.

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

Question 27 Info																												
Question Type:	Multiple Choice																											
Status:	Active																											
Always select on test?	No																											
Authorized for practice?	No																											
Points:	1.00																											
Time to Complete:	3																											
Difficulty:	2.00																											
System ID:	1102331																											
User-Defined ID:	REV 00, 11/17/14																											
Cross Reference Number:	LGSOPS0026A.IL5B																											
Topic:	Predict plant response to loss of 1AY160																											
Num Field 1:	2.8																											
Num Field 2:	3.0																											
Text Field:	262002 K1.14																											
Comments:	<table><tr><td>Level</td><td>RO</td></tr><tr><td>Tier</td><td>2</td></tr><tr><td>Group</td><td>1</td></tr><tr><td>KA # and Rating</td><td>262002 K1.14 (2.8/3.0)</td></tr><tr><td>KA Statement</td><td>262002 UPS (AC/DC) Knowledge of the physical connections and/or cause-effect relationships between UNINTERRUPTABLE POWER SUPPLY (A.C./D.C.) and the following: K1.14 Main steam line radiation monitors</td></tr><tr><td>References</td><td>E-1AY160, Rev.27 1S26.1.Q (COL), Rev.2 ARC-MCR-107, I1, Rev.1 E-1BY160, Rev.23</td></tr><tr><td>Examinee References</td><td>None</td></tr><tr><td>Learning Objective</td><td>LGSOPS0026A.IL5B</td></tr><tr><td>Question source</td><td>New</td></tr><tr><td>Question history</td><td>None</td></tr><tr><td>Cognitive level</td><td>Higher</td></tr><tr><td>10 CFR 55</td><td>41.4</td></tr><tr><td>Comments</td><td>None</td></tr></table>		Level	RO	Tier	2	Group	1	KA # and Rating	262002 K1.14 (2.8/3.0)	KA Statement	262002 UPS (AC/DC) Knowledge of the physical connections and/or cause-effect relationships between UNINTERRUPTABLE POWER SUPPLY (A.C./D.C.) and the following: K1.14 Main steam line radiation monitors	References	E-1AY160, Rev.27 1S26.1.Q (COL), Rev.2 ARC-MCR-107, I1, Rev.1 E-1BY160, Rev.23	Examinee References	None	Learning Objective	LGSOPS0026A.IL5B	Question source	New	Question history	None	Cognitive level	Higher	10 CFR 55	41.4	Comments	None
Level	RO																											
Tier	2																											
Group	1																											
KA # and Rating	262002 K1.14 (2.8/3.0)																											
KA Statement	262002 UPS (AC/DC) Knowledge of the physical connections and/or cause-effect relationships between UNINTERRUPTABLE POWER SUPPLY (A.C./D.C.) and the following: K1.14 Main steam line radiation monitors																											
References	E-1AY160, Rev.27 1S26.1.Q (COL), Rev.2 ARC-MCR-107, I1, Rev.1 E-1BY160, Rev.23																											
Examinee References	None																											
Learning Objective	LGSOPS0026A.IL5B																											
Question source	New																											
Question history	None																											
Cognitive level	Higher																											
10 CFR 55	41.4																											
Comments	None																											

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

28

ID: 1102409

Points: 1.00

Unit 1 LOCA is in progress, with the following:

- RPV level is -135", down slow
- RPV pressure is 490 psig, down slow
- 1B and 1D RHR Pumps are running

WHICH ONE of the following will provide **DEFINITIVE** evidence that some amount of RHR Loop 'B' water is actually injecting into the RPV?

- A. FI51-1R603B (LOOP B) reads 4,000 gpm
- B. HV51-1F041D (INBOARD CHECK) "Disc Pos" indicates OPEN, "Stem Pos" indicates CLOSED
- C. DIV 2 LPCI INJECTION VALVE DP PERMISSIVE alarm
- D. 1B RHR PUMP DISCH HI/LO PRESS alarm

Answer: B

Answer Explanation

Refer to RHR P&ID M-0051, Sheet 3, Coordinates F/G-7, which shows the LPCI 'D' Inboard [Testable] Check Valve HV-1F041D. On MCR panel 10C601, this valve has a remote-position indicator lamp with two halves. The top half of the lamp is labeled "Disc Pos", the bottom half is labeled "Stem Pos". Only by actual flow pushing against the check valve's disc will the "Disc Pos" half of the lamp indicate OPEN (i.e., Green light OFF, Red light ON). The "Stem Pos" half of the lamp will indicate OPEN only when operators apply a TEST signal (TEST pushbutton) to surveil the check valve's operability; in that case, the "Stem Pos" is indicative of the position of the pneumatic operator used to open the valve. The LPCI 'D' injection line flow indicator (FI-1R603D) is shown at P&ID Coordinate G-3. This instrument senses flow upstream of the line's injection valve (1F017D); therefore, this indication is NOT definitive evidence of injection into the RPV.

'B' is correct: HV51-1F041D (INBOARD CHECK) "Disc Pos" indicates OPEN, "Stem Pos" indicates CLOSED. Correct for the reasons described above.

'A' is wrong: FI51-1R603B (LOOP B) reads 4,000 gpm. Plausible to the examinee for three primary reasons: 1) at LGS, use of the INBOARD CHECK valve indication is given very little emphasis, if any, during the course of the Simulator Phase; 2) students are accustomed to using the injection line flow indicators to determine when RHR is injecting; and 3) many examinees have never given a thought to exactly where in the system the flow element for FI51-1R603B is located.

'C' is wrong: DIV 2 LPCI INJECTION VALVE DP PERMISSIVE alarm. Refer to alarm response card ARC-MCR-115, F4 (DIV 2 LPCI INJECTION VALVE DP PERMISSIVE). This alarm simply alerts operators to the fact that all conditions are satisfied for the automatic opening of the LPCI 'B' injection valve (F017B). Under expected LOCA conditions, this alarm is expected at an RPV pressure well above the RHR pump shutoff head pressure (~270 psig). Plausible to the examinee who confuses the opening of the injection valve with conditions that would allow actual injection flow into the RPV.

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

'D' is wrong: 1B RHR PUMP DISCH HI/LO PRESS alarm. Refer to alarm response card ARC-MCR-115, F3. This is NOT an expected alarm so long as the RHR pump has an unobstructed flowpath at its discharge. Plausible to the weaker examinee who believes the alarm to be indicative of sufficient pump discharge pressure so as to cause sufficient injection flow into the RPV.

Question 28 Info		
Question Type:	Multiple Choice	
Status:	Active	
Always select on test?	No	
Authorized for practice?	No	
Points:	1.00	
Time to Complete:	3	
Difficulty:	2.00	
System ID:	1102409	
User-Defined ID:	REV 00, 11/17/14	
Cross Reference Number:	LGSOPS0051	
Topic:	Recognize definitive MCR indication of LPCI injection flow into the RPV	
Num Field 1:	2.7	
Num Field 2:	2.9	
Text Field:	203000 K5.01	
Comments:	<div> <div>Level</div> <div>Tier</div> <div>Group</div> <div>KA # and Rating</div> <div>KA Statement</div> <div>References</div> <div>Examinee References</div> <div>Learning Objective</div> <div>Question source</div> <div>Question history</div> </div> <div> <div>RO</div> <div>2</div> <div>1</div> <div>203000 K5.01 (2.7/2.9)</div> <div>203000 RHR/LPCI: Injection Mode</div> <div>Knowledge of the operational implications of the following concepts as they apply to RHR/LPCI: INJECTION MODE (PLANT SPECIFIC): K5.01 Testable check valve operation</div> <div>P&ID M-0051, Sheet 3, Rev.68</div> <div>ARC-MCR-115, F4, Rev.0</div> <div>ARC-MCR-115, F3, Rev.1</div> <div>None</div> <div>LGSOPS0051, no specified objective</div> <div>New</div> <div>None</div> </div>	

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

	Cognitive level	Higher
	10 CFR 55	41.5
	Comments	None

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

29

ID: 1102424

Points: 1.00

Unit 2 is operating at 100% power.

The following occurs:

- FWLCS TROUBLE alarm is received
- The alarm is due to the control signal failing to 0 mA on RFPT B
- No operator action is taken

Then:

- A main turbine trip occurs
- An automatic RPS scram is successful

WHICH ONE of the following identifies:

- (1) the operating mode of RFPT B (M/A or MSC), and
(2) whether or not the Scram Profile activated (Yes/No)?

- A. (1) MSC
(2) No
- B. (1) MSC
(2) Yes
- C. (1) M/A
(2) Yes
- D. (1) M/A
(2) No

Answer: B

Answer Explanation

Prior to the control signal failure on RFPT B, the control mode for all three RFPTs (A, B, C) is "M/A" (Master Automatic). The essential information to determine how RFPT B responds when its control signal is completely lost (i.e., 0 mA signal) is found in S06.1.H (Responding to Alarms and Selected Events at the Feedwater Level Control System Operator Station), specifically, Attachment 1 Alarm List, page 17, signal identity 2XX-FW311.ICSF. There, we find that a complete control signal failure ("outside the 4-20 mA range") automatically transfers the affected RFPT control to the "MSC" (Master Speed Change) control mode and locks up that RFPT at its current speed. With "no operator action taken" that remains the RFPT B control mode both prior to and after the RPS scram. The successful RPS scram (i.e., de-energization of the K14 "scram relays" in both RPS Trip Systems (A and B) results in the automatic activation of the FWLCS "Scram Profile" (so long as Three-Element level control is available). The "locked up" RFPT B has no impact on Scram Profile activation.

'B' is correct: (1) MSC; (2) Yes. Correct for the reasons described above.

'A' is wrong: (1) MSC; (2) No. Plausible to the examinee who does recognize how RFPT B responds to the control signal failure, but who incorrectly concludes that, along with the availability of Three-Element Level Control, all 3 RFPTs must also be operating in M/A control mode in order for the Scram Profile to activate.

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

'C' is wrong: (1) M/A; (2) Yes. Plausible to the examinee who incorrectly recalls the information found in the Alarm List discussed above. There, we find that, unlike the case of a "hard" failure of the control signal (i.e., outside the 4-20 mA range), a "soft" failure (i.e., a control signal deviation condition) does NOT swap the RFPT to MSC control mode, thus leaving RFPT B operating in M/A mode.

'D' is wrong: (1) M/A; (2) No. The first part is plausible for the same reason as for choice 'C'. The second part is plausible to the examinee who incorrectly concludes that a single RFPT "control signal failure" behaves much like, for example, a TOTAL FW FLOW ERROR condition...refer to the Alarm List, signal identity 2XX-FW302.ITFFE, where we see that such a "failure" condition will in fact disable the Scram Profile.

Question 29 Info		
Question Type:	Multiple Choice	
Status:	Active	
Always select on test?	No	
Authorized for practice?	No	
Points:	1.00	
Time to Complete:	3	
Difficulty:	2.50	
System ID:	1102424	
User-Defined ID:	REV 00, 11/17/14	
Cross Reference Number:	LLOT0550.4	
Topic:	Predict FWLCS response to a single RFPT control signal loss (hard failure)	
Num Field 1:	3.1	
Num Field 2:	3.2	
Text Field:	259002 K4.06	
Comments:	<div> <div>Level</div> <div>RO</div> </div> <div> <div>Tier</div> <div>2</div> </div> <div> <div>Group</div> <div>1</div> </div> <div> <div>KA # and Rating</div> <div>259002 K4.06 (3.1/3.2)</div> </div> <div> <div>KA Statement</div> <div>259002 Reactor Water Level Control Knowledge of REACTOR WATER LEVEL CONTROL SYSTEM design feature(s) and/or interlocks which provide for the following: K4.06 Control signal failure</div> </div> <div> <div>References</div> <div>S06.1.H U/2, Rev. 8 ARC-MCR-107, D5, Rev.5</div> </div> <div> <div>Examinee</div> <div>None</div> </div> <div> <div>References</div> <div></div> </div> <div> <div>Learning</div> <div>LLOT0550.4</div> </div> <div> <div>Objective</div> <div></div> </div> <div> <div>Question source</div> <div>New</div> </div> <div> <div>Question history</div> <div>None</div> </div> <div> <div>Cognitive level</div> <div>Lower</div> </div> <div> <div>10 CFR 55</div> <div>41.7</div> </div> <div> <div>Comments</div> <div>None</div> </div>	

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

30

ID: 1102426

Points: 1.00

Unit 1 operators are ready to commence a GP-2, Appendix 1 reactor startup.

Initial conditions:

- All control rods fully inserted
- All SRMs are reading 100 CPS

Following the withdrawal of 20 control rods, all SRMs are reading 200 CPS.

WHICH ONE of the following:

- (1) describes a GP-2, Appendix 1 requirement when "three doublings" of the SRM count rate is reached, and
- (2) identifies how many additional control rods (beyond the initial 20) will be withdrawn to reach criticality?

(For Part (2), assume equal control rod worth for all rod withdrawals.)

- A.
- (1) Use only single-notch rod motion between positions 04 and 36 until the reactor is critical and one turbine bypass valve is open
 - (2) 40
- B.
- (1) Use only single-notch rod motion between positions 12 and 20 until the reactor is critical and one turbine bypass valve is open
 - (2) 20
- C.
- (1) Use only single-notch rod motion between positions 04 and 36 until the reactor is critical and one turbine bypass valve is open
 - (2) 20
- D.
- (1) Use only single-notch rod motion between positions 12 and 20 until the reactor is critical and one turbine bypass valve is open
 - (2) 40

Answer: C

Answer Explanation

Refer to GP-2, Appendix 1, steps 3.2.9 and 3.2.13. When three SRM count rate doublings is reached, step 3.2.13.4 directs operators to use only single-notch rod withdrawals between notches 04 and 36 until the reactor is critical and one turbine bypass valve is open. Refer to BWR Reactor Theory Chapter 8, "Reactor Operational Physics", pages 13-28, regarding "subcritical multiplication" and the approach to reactor criticality. From that "Generic Fundamentals" training, we recall that the distance to criticality is halved with each additional, equal amount of reactivity (% delta-K/K). One essential point to conclude from this is...with each halving of the distance to criticality, the SRM count rate doubles. The GFE "rule of thumb" is..."When enough reactivity is added to the reactor to double the count rate, if the same reactivity is added to the reactor again, the reactor will be supercritical."

'C' is correct: (1) Use only single-notch rod motion between positions 04 and 36 until the reactor is critical and one turbine bypass valve is open; (2) 20. Part (1) is taken directly from step 3.2.13.4 of GP-2, Appendix 1. Part (2) is correct based on the stem condition fact that 20 rods produced the first count rate doubling; therefore, another 20 rods (assuming equal rod worths) will bring the reactor critical.

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

'A' is wrong: (1) Use only single-notch rod motion between positions 04 and 36 until the reactor is critical and one turbine bypass valve is open; (2) 40. Part (2) is plausible to the examinee incorrectly recalls the GFE thumb rule. Instead, that examinee believes that if "double" (i.e., twice) the amount of the initial rod worth (of 20 rods) is added, the reactor will reach criticality. As such, the examinee concludes that an additional 40 rods (i.e., 2 x the initial 20) are withdrawn, criticality will be reached.

'B' is wrong: (1) Use only single-notch rod motion between positions 12 and 20 until the reactor is critical and one turbine bypass valve is open; (2) 20. Part (1) is plausible to the examinee who cannot recall the GP-2, Appendix 1, step 3.2.13.4 requirement. However, that examinee does recall the generality concerning "integral rod worth" as described in Generic Fundamentals Reactor Theory Chapter 5 (Control Rods), page 16 and Figure 5-6, where we discover that the highest integral rod worth is between notches 12 and 16; thus, this choice (modified to read "between positions 12 and 20") provides that distraction.

'D' is wrong: (1) Use only single-notch rod motion between positions 12 and 20 until the reactor is critical and one turbine bypass valve is open; (2) 40. Plausible for the same reasons as that for choices 'A' and 'B'.

Question 30 Info		
Question Type:	Multiple Choice	
Status:	Active	
Always select on test?	No	
Authorized for practice?	No	
Points:	1.00	
Time to Complete:	3	
Difficulty:	2.50	
System ID:	1102426	
User-Defined ID:	REV 00, 11/17/14	
Cross Reference Number:		
Topic:	Recall GP-2 Appx 1 guidance regarding SRM count rate doublings	
Num Field 1:	4.4	
Num Field 2:	4.7	
Text Field:	2.1.7	
Comments:	<div> <div>Level</div> <div>Tier</div> <div>Group</div> <div>KA # and Rating</div> <div>KA Statement</div> <div>References</div> <div>Examinee References</div> <div>Learning Objective</div> <div>Question source</div> <div>Question history</div> <div>Cognitive level</div> <div>RO</div> <div>3</div> <div>N/A</div> <div>2.1.7 (4.4/4/7)</div> <div>2.1.7 Ability to evaluate plant performance and make operational judgments based on operating characteristics, reactor behavior, and instrument interpretation.</div> <div>GP-2, Appendix 1, Rev.49 GFE Reactor Theory Chapter 5, Rev.4 GFE Reactor Theory Chapter 8, Rev.4</div> <div>None</div> <div>No specified objective</div> <div>New</div> <div>None</div> <div>Higher</div> </div>	

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

	10 CFR 55 Comments	41.5 None
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EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

31

ID: 1102445

Points: 1.00

Unit 1 is operating at 100% power.

As a result of several OPERABILITY issues, operators enter LCO 3.0.3.

WHICH ONE of the following identifies a requirement of LCO 3.0.3?

(Answer choices are referenced from the time that LCO 3.0.3 was entered.)

- A. Must begin reducing power within 2 hours
- B. Must be in OPCIION 3 within 6 hours
- C. Must be in OPCIION 3 within 13 hours
- D. Must be in OPCIION 4 within 24 hours

Answer: C

Answer Explanation

Tech Spec LCO 3.0.3 reads...

3.0.3 When a Limiting Condition for Operation is not met, except as provided in the associated ACTION requirements, within one hour action shall be initiated to place the unit in an OPERATIONAL CONDITION in which the Specification does not apply by placing it, as applicable, in:

- a. At least STARTUP within the next 6 hours.
- b. At least HOT SHUTDOWN within the following 6 hours, and
- c. At least COLD SHUTDOWN within the subsequent 24 hours.

'C' is correct: Must be in OPCIION 3 within 13 hours. OPCIION 3 is HOT SHUTDOWN. Operator have a total 13 hours (from the time of entering the LCO) to place the plant in HOT SHUTDOWN. The 13 hours considers: 1 hour to take action + 6 hours thereafter to be in STARTUP (OPCIION 2) + 6 hours thereafter to be in HOT SHUTDOWN (OPCIION 3), for a total of 13 hours.

'A' is wrong: Must begin reducing power within 2 hours. Plausible to the examinee who simply cannot recall the "1 hour to take action" requirement.

'B' is wrong: Must be in OPCIION 3 within 6 hours. Plausible to the examinee who forgets that the time requirements are additive, but instead only recalls the "At least HOT SHUTDOWN within the following 6 hours" requirement of the LCO.

'D' is wrong: Must be in OPCIION 4 within 24 hours. Plausible for reasons similar to that for choice 'B'; in this case, the examinee forgets the time requirements are additive and recall the "At least COLD SHUTDOWN within the following 24 hours" requirement of the LCO.

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

Question 31 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	3
Difficulty:	2.00
System ID:	1102445
User-Defined ID:	REV 00, 11/17/14
Cross Reference Number:	LGSOPS1800.5
Topic:	Recall LCO 3.0.3 requirements
Num Field 1:	4.0
Num Field 2:	4.7
Text Field:	2.2.22
Comments:	<div> <div>Level</div> <div>RO</div> </div> <div> <div>Tier</div> <div>3</div> </div> <div> <div>Group</div> <div>N/A</div> </div> <div> <div>KA # and Rating</div> <div>2.2.22 (4.0/4.7)</div> </div> <div> <div>KA Statement</div> <div>Knowledge of limiting conditions for operations and safety limits.</div> </div> <div> <div>References</div> <div>Tech Spec LCO 3.0.3 (latest)</div> </div> <div> <div>Examinee</div> <div>None</div> </div> <div> <div>References</div> <div></div> </div> <div> <div>Learning</div> <div>LGSOPS1800.5</div> </div> <div> <div>Objective</div> <div></div> </div> <div> <div>Question source</div> <div>New</div> </div> <div> <div>Question history</div> <div>None</div> </div> <div> <div>Cognitive level</div> <div>Lower</div> </div> <div> <div>10 CFR 55</div> <div>41.5</div> </div> <div> <div>Comments</div> <div>None</div> </div>

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

32

ID: 1104773

Points: 1.00

Unit 1 is operating at 100% power, with the following:

- Some amount of failed fuel
- An unisolable steam line break in Secondary Containment

Operators enter T-103 (Secondary Containment Control), with the following:

- MSL radiation monitors have reached 3 x NFPB due to the failed fuel
- One area has reached MSO for radiation
- A second area has reached MNO for radiation and is continuing to rise
- Suppression Pool level is 22 feet, steady

WHICH ONE of the following describes a TRIP strategy to be employed?

- A. Perform a T-103 Shutdown and rapidly depressurize the RPV through the Bypass Valves
- B. Perform a T-103 Shutdown and ensure the MSIVs are closed
- C. Immediately scram the reactor and perform a T-112 Emergency Blowdown
- D. Commence a GP-3 Normal Plant Shutdown

Answer: B

Answer Explanation

Refer to T-103 (Secondary Containment Control). With one area having reached the MSO value for high radiation due to an unisolable steam line break in Secondary Containment (i.e., "a primary system discharging into the Reactor Enclosure"), the required strategy is to perform a T-103 Shutdown (rapid plant shutdown) per Step SCC/RAD-11. Additionally, the MSL radiation monitors having reached 3 x NFPB requires the same strategy; i.e., a T-103 Shutdown per Step SCC/RAD-4. Were it not for the failed fuel and consequential MSL high radiation condition, operators would perform an "anticipatory" rapid depressurization of the RPV to the main condenser (through the Bypass Valves), as permitted by T-101 (RPV Control), Step RC/P-6. However, because of the failed fuel and MSL high radiation condition, operators are directed to "ensure the MSIVs are closed"..."unless they are required (to be left open) by T-112 (Emergency Blowdown), Step EB-16". A review of Step EB-16 (of T-112) shows that the main condenser may provide an alternate means of depressurizing the RPV in the case where supp pool level is below the minimum required for opening the ADS valves; i.e., 4.2 feet. Stem conditions show that supp pool level is well above that...22 feet.

'B' is correct: Perform a T-103 Shutdown and ensure the MSIVs are closed. Correct for the reasons described above.

'A' is wrong: Perform a T-103 Shutdown and rapidly depressurize the RPV through the Bypass Valves. Plausible to the examinee who fails to recognize the significance of the 3 x NFPB readings on the MSL radiation monitors.

'C' is wrong: Immediately scram the reactor and perform a T-112 Emergency Blowdown. Plausible to the examinee who fails to recall that an immediate manual scram is never a strategy employed by T-103. That examinee also fails to recognize that until a second area reaches its MSO value for radiation, an Emergency Blowdown is not required.

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

'D' is wrong: Commence a GP-3 Normal Plant Shutdown. T-103 does direct a GP-3 Normal Plant Shutdown where there is NO primary system discharge into secondary containment and two areas have reached MSO, neither of which is the case for these stem conditions. Plausible to the examinee who fails to recognize this fact.

Question 32 Info		
Question Type:	Multiple Choice	
Status:	Active	
Always select on test?	No	
Authorized for practice?	No	
Points:	1.00	
Time to Complete:	3	
Difficulty:	2.00	
System ID:	1104773	
User-Defined ID:	REV 00, 11/17/14	
Cross Reference Number:		
Topic:	Recognize TRIP strategy given failed fuel and unisolable steam line break in Secondary CTMT	
Num Field 1:	3.8	
Num Field 2:	4.3	
Text Field:	2.3.11	
Comments:	<div> <div>Level</div> <div>RO</div> <div>Tier</div> <div>3</div> <div>Group</div> <div>N/A</div> <div>KA # and Rating</div> <div>2.3.11 (3.8/4/3)</div> <div>KA Statement</div> <div>2.3.11 Ability to control radiation releases.</div> <div>References</div> <div>T-103, Rev.20</div> <div>T-112, Rev.14</div> <div>Examinee</div> <div>None</div> <div>References</div> <div></div> <div>Learning</div> <div></div> <div>Objective</div> <div></div> <div>Question source</div> <div>New</div> <div>Question history</div> <div>None</div> <div>Cognitive level</div> <div>Higher</div> <div>10 CFR 55</div> <div>41.10, 41.11</div> <div>Comments</div> <div>None</div> </div>	

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

33

ID: 1102449

Points: 1.00

Unit 1 is operating at 100% reactor power when the following MCR alarms are received:

- MOTOR DRIVEN FIRE PUMP AUTO START
- REAC 1 EL 177 PB NE STAIR (on fire panel)

WHICH ONE of the following identifies an Immediate Operator Action of SE-8 (Fire)?

- A. Notify Security
- B. Start Diesel Driven Fire Pump
- C. Evacuate entire Unit 1 Reactor Enclosure
- D. Note the time and inform Shift Manager that EAL 15-minute clock has started

Answer: D

Answer Explanation

Refer to SE-8, step 3.2. Stern indicates there is in fact an actual fire (fire alarm + fire pump auto-start); therefore, step 3.2.3 applies.

'D' is correct: Note the time and inform Shift Manager that EAL 15-minute clock has started.

Correct for the reason described above.

'A' is wrong: Notify Security. Plausible to the examinee who cannot recall the SE-8 IOAs but who does recall that notifying Security is required by SE-8, Attachment 8, step 1.2; i.e., this is NOT an Immediate Operator Action (IOA).

'B' is wrong: Start Diesel Driven Fire Pump. This action is called for in Follow-up Action Step 4.6.2.1; it is NOT an IOA. Plausible to the examinee who does recall this action but mistakenly believes it to be an IOA.

'C' is wrong: Evacuate entire Unit 1 Reactor Enclosure. While IOA step 3.2.2 does direct operators to execute the evacuation/announcement requirements of Attachment 8, the Attachment 8, itself, does NOT require that the entire Reactor Enclosure (in the case of this question) be evacuated; rather, only the location of the fire (at most, only R.E. Elevation 177', in the case of this question) needs to be evacuated. Plausible to the examinee who recall the IOA that directs evacuations, but who does not recall that the evacuation need only be a limited-area one.

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

Question 33 Info																																
Question Type:	Multiple Choice																															
Status:	Active																															
Always select on test?	No																															
Authorized for practice?	No																															
Points:	1.00																															
Time to Complete:	3																															
Difficulty:	2.00																															
System ID:	1102449																															
User-Defined ID:	REV 00, 11/17/14																															
Cross Reference Number:	LLOT1563.02																															
Topic:	SE-8 - Recall Immediate Operator Actions for Fire In Plant																															
Num Field 1:	3.4																															
Num Field 2:	3.9																															
Text Field:	2.4.27																															
Comments:	<table><tr><td>Level</td><td>RO</td></tr><tr><td>Tier</td><td>3</td></tr><tr><td>Group</td><td>N/A</td></tr><tr><td>KA # and Rating</td><td>2.4.27 (3.4/3.9)</td></tr><tr><td>KA Statement</td><td>2.4.27 Knowledge of "fire in the plant" procedures.</td></tr><tr><td>References</td><td>SE-8, Rev.50</td></tr><tr><td>Examinee</td><td>None</td></tr><tr><td>References</td><td></td></tr><tr><td>Learning</td><td>LLOT1563.02 (in lesson plan</td></tr><tr><td>Objective</td><td>LGSOPS2000)</td></tr><tr><td>Question source</td><td>Bank 973779</td></tr><tr><td>Question history</td><td>None</td></tr><tr><td>Cognitive level</td><td>Lower</td></tr><tr><td>10 CFR 55</td><td>41.10</td></tr><tr><td>Comments</td><td>None</td></tr></table>		Level	RO	Tier	3	Group	N/A	KA # and Rating	2.4.27 (3.4/3.9)	KA Statement	2.4.27 Knowledge of "fire in the plant" procedures.	References	SE-8, Rev.50	Examinee	None	References		Learning	LLOT1563.02 (in lesson plan	Objective	LGSOPS2000)	Question source	Bank 973779	Question history	None	Cognitive level	Lower	10 CFR 55	41.10	Comments	None
Level	RO																															
Tier	3																															
Group	N/A																															
KA # and Rating	2.4.27 (3.4/3.9)																															
KA Statement	2.4.27 Knowledge of "fire in the plant" procedures.																															
References	SE-8, Rev.50																															
Examinee	None																															
References																																
Learning	LLOT1563.02 (in lesson plan																															
Objective	LGSOPS2000)																															
Question source	Bank 973779																															
Question history	None																															
Cognitive level	Lower																															
10 CFR 55	41.10																															
Comments	None																															

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

34

ID: 1102450

Points: 1.00

WHICH ONE of the following events would, by itself, require an entry into T-103 (Secondary Containment Control)?

- A. 1 REAC ENCL REFUEL FLR VENT EXHAUST RAD MON A/B HI-HI / DOWNSCALE alarm due to confirmed valid R.E. exhaust rad hi-hi
- B. CONT. ENCL STEAM FLOODING DAMPER PNL 00C728 TROUBLE alarm; damper closure is confirmed
- C. REFUELING FLOOR LOW DELTA P alarm; d/p is confirmed to be -0.1" w.g., steady
- D. REACTOR ENCL AREA HI RADIATION alarm due to confirmed valid alarm on the SLC System Area Radiation Monitor (ARM)

Answer: A

Answer Explanation

Refer to alarm response card ARC-MCR-109, E1 (1 REAC ENCL REFUEL FLR VENT EXHAUST RAD MON A/B HI-HI / DOWNSCALE). Operator Action #2 directs entry into T-103.

'A' is correct: 1 REAC ENCL REFUEL FLR VENT EXHAUST RAD MON A/B HI-HI / DOWNSCALE alarm due to confirmed valid R.E. exhaust rad hi-hi. Correct for the reason described above.

'B' is wrong: CONT. ENCL STEAM FLOODING DAMPER PNL 00C728 TROUBLE alarm; damper closure is confirmed. Alarm response card ARC-MCR-002, C5 provides direction for this alarm. Plausible to the examinee who too quickly relates this alarm to the similar T-103 entry condition..."R.E. steam flooding damper actuation". The Control Enclosure is NOT associated with/connected to the Reactor Enclosure.

'C' is wrong: REFUELING FLOOR LOW DELTA P alarm; d/p is confirmed to be -0.1" w.g., steady. The strongest of the distracters; plausible to the examinee who recalls that a sustained (50 minute time delayed) low d/p (setpoint = -0.1" w.g.) is in fact an automatic R.E. HVAC isolation, and so believes that, by itself, warrants a T-103 entry. It does not; only an R.E. HVAC isolation due to hi-hi radiation is a T-103 entry.

'D' is wrong: REACTOR ENCL AREA HI RADIATION alarm due to confirmed valid alarm on the SLC System Area Radiation Monitor (ARM). A very strong distracter; plausible to the examinee who recalls that any alarming ARM for one of the Areas listed on Table SCC-1 of T-103 is a T-103 entry condition, but who incorrectly concludes that the SLC System Area is one of those Table SCC-1 Areas...it is NOT.

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

Question 34 Info		
Question Type:	Multiple Choice	
Status:	Active	
Always select on test?	No	
Authorized for practice?	No	
Points:	1.00	
Time to Complete:	4	
Difficulty:	2.50	
System ID:	1102450	
User-Defined ID:	REV 00, 11/17/14	
Cross Reference Number:	LLOT1560.2D	
Topic:	Recognize T-103 entry condition	
Num Field 1:	4.6	
Num Field 2:	4.8	
Text Field:	295034 2.4.1	
Comments:	<div> <div>Level</div> <div>RO</div> <div>Tier</div> <div>1</div> <div>Group</div> <div>2</div> <div>KA # and Rating</div> <div>295034 2.4.1 (4.6/4.8)</div> <div>KA Statement</div> <div>295034 Secondary Containment Ventilation High Radiation 2.4.1 Knowledge of EOP entry conditions and immediate action steps.</div> <div>References</div> <div> T-103, Rev.20 ARC-MCR-109, E1, Rev.2 ARC-MCR-002, C5, Rev.0 ARC-MCR-002, F2, Rev.4 ARC-MCR-109, B4, Rev.2 </div> <div>Examinee References</div> <div>None</div> <div>Learning Objective</div> <div>LLOT1560.2D</div> <div>Question source</div> <div>New</div> <div>Question history</div> <div>None</div> <div>Cognitive level</div> <div>Lower</div> <div>10 CFR 55</div> <div>41.10</div> <div>Comments</div> <div>None</div> </div>	

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

35

ID: 1102542

Points: 1.00

A bus fault causes the complete loss of all Unit 1 Div 1 125 VDC power.

WHICH ONE of the following describes the impact of this power loss?

- A. If RCIC is running, its turbine governor valve goes fully closed as the flow controller output signal goes fully downscale
- B. A running RWCU pump trips on low flow due to closure of HV-44-1F004 (RWCU Outboard Isolation Valve)
- C. None of the non-ADS SRVs can be electrically opened
- D. 'C' SLC Pump cannot be started from the MCR

Answer: C

Answer Explanation

The non-ADS SRVs have control switches only at MCR panel 10C626 and at the Remote Shutdown Panel (RSP), both of which control only the Div 1 DC-powered solenoid for each of those SRVs. Therefore, with the loss of all Div 1 125 VDC, none of the non-ADS SRVs can be electrically opened. [Refer to E-1FA, Loss of Division 1 Safeguard 125/250V DC Bus 1FA, Section 1.1 NOTE #3, to validate this.]

'C' is correct: None of the non-ADS SRVs can be electrically opened. Correct for the reason described above.

'A' is wrong: If RCIC is running, its turbine governor valve goes fully closed as the flow controller output signal goes fully downscale. Just the opposite happens...the loss of DC results in the RCIC flow controller output signal going fully upscale, causing the turbine to quickly ramp up and trip on mechanical overpeed.

'B' is wrong: A running RWCU pump trips on low flow due to closure of HV-44-1F004 (RWCU Outboard Isolation Valve). Refer to E-1FA, Confirming Indication 1.1.5, which shows that the RWCU Inboard Isolation Valve, HV-44-1F001, closes on the Div 1 DC bus loss (not the Outboard Isolation Valve, HV-44-1F004). The 1F001 valve closes due to an NSSSS Group 3 half-isolation resulting from the bus loss; it trips the 'A' Channel which closes the 1F001 valve. Plausible to the examinee who confuses the "Inboard/Outboard versus Div 1/Div2" association...an often illustrated problem among ILT Candidates.

'D' is wrong: 'C' SLC Pump cannot be started from the MCR. The SLC Pumps are not reliant on DC power; they are 480 VAC MCC-powered motors and control power is supplied from the MCC breaker's internal 480/120 VAC step-down transformer. If required, the 'C' SLC pump will start from its control switch at MCR panel 10C603. However, if necessary to start the 'A' SLC Pump, it will NOT start. This is because Div 1 DC powers a Level Transmitter (LT) in the SLC Storage Tank; losing that DC power causes the LT to fail downscale, resulting in a "perceived" (though not actual) low level in the tank...this low level signal would immediately trip the 'A' SLC pump if it were already running and prevent its start (manual or automatic) if it were required. Plausible to examinee who cannot accurately recall this rather complicated association between DC power / SLC Tank level transmitters / SLC pumps.

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

Question 35 Info		
Question Type:	Multiple Choice	
Status:	Active	
Always select on test?	No	
Authorized for practice?	No	
Points:	1.00	
Time to Complete:	4	
Difficulty:	3.00	
System ID:	1102542	
User-Defined ID:	REV 00, 11/17/14	
Cross Reference Number:	LGSOPS0001B.IL3J	
Topic:	Determine impact of Unit 1 Div 1 DC Bus loss	
Num Field 1:	3.3	
Num Field 2:	3.3	
Text Field:	295004 AK2.03	
Comments:	<p>Level RO</p> <p>Tier 1</p> <p>Group 1</p> <p>KA # and Rating 295004 AK2.03 (3.3/3.3)</p> <p>KA Statement 295004 Partial or Total Loss of DC Power Knowledge of the interrelations between PARTIAL OR COMPLETE LOSS OF D.C. POWER and the following: AK2.03 D.C. bus loads</p> <p>References E-1FA, Rev.11</p> <p>Examinee None</p> <p>References</p> <p>Learning LGSOPS0001B.IL3j</p> <p>Objective</p> <p>Question source New</p> <p>Question history None</p> <p>Cognitive level Higher*</p> <p>10 CFR 55 41.7</p> <p>Comments *Justification for Higher Cognitive categorization: Where it <u>might</u> be argued that <u>directly</u> choosing the correct answer requires only recalling two pieces of information (i.e., 1) the locations at which certain of the SRVs can be operated, and 2) the DC Bus required in order to operate those SRVs at each location), a good amount of higher cognitive thinking is required in order to eliminate the 'A' and 'D' distracters, especially. The explanations for each of those distracters speaks for itself in this regard. Based on all of this, the Exam Author believes that an HCL categorization is appropriate in accordance with the discussion found in NUREG-1021, Appendix A, Section C.3.c, 1st paragraph at the top of page 7 of 11.</p>	

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

36

ID: 1102543

Points: 1.00

Unit 2 is in OPCON 4 when the following occurs:

- Shutdown Cooling (SDC) is lost
- All forced reactor coolant circulation is lost

Operators raise RPV water level to +90" on UPSET RANGE to establish natural circulation.

An in-progress OPDRV causes RPV water level to slowly lower uncontrollably.

WHICH ONE of the following identifies when natural circulation will be considered to be lost if RPV level continues to lower?

As soon as UPSET RANGE indicated level drops below...

- A. +78"
- B. +68"
- C. +60"
- D. +50"

Answer: A

Answer Explanation

Refer to GP-6.2 (Shutdown Operations - Shutdown Condition Tech Spec Actions), Section 3.0 CAUTION. There, we find that natural circulation occurs when level is raised to either +60" on level indicator LI-42-*R605 (which is the SHUTDOWN RANGE level instrument) or to +78" on level indicator LI-42-*R608 (which is the UPSET RANGE level instrument).

'A' is correct: +78". Correct for the reasons described above.

'B' is wrong: +68". Although this level has no specific relevance at LGS, its value is as plausible as is +78", given two considerations: 1) inexperienced ILT Candidates have little or no actual plant operating experience involving the establishment of natural circulation, and 2) the same can be said for their exposure to the concept as part of their simulator phase of training/qualification.

'C' is wrong: +60". This choice would be correct if the stem condition/question statement considered the SHUTDOWN RANGE level instrument, rather than the UPSET RANGE. Plausible to the examinee who cannot recall which of the two level instruments this +60" value applies to.

'D' is wrong: +50". This choice is plausible for reasons that parallel those of choice 'B'.

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

Question 36 Info		
Question Type:	Multiple Choice	
Status:	Active	
Always select on test?	No	
Authorized for practice?	No	
Points:	1.00	
Time to Complete:	3	
Difficulty:	2.50	
System ID:	1102543	
User-Defined ID:	REV 00, 11/17/14	
Cross Reference Number:	LLOT2001A	
Topic:	Recall RPV level associated with natural circulation	
Num Field 1:	3.8	
Num Field 2:	4.1	
Text Field:	295031 EK1.02	
Comments:	<div> <div>Level</div> <div>RO</div> <div>Tier</div> <div>1</div> <div>Group</div> <div>1</div> <div>KA # and Rating</div> <div>295031 EK1.02 (3.8/4.1)</div> <div>KA Statement</div> <div>295031 Reactor Low Water Level Knowledge of the operational implications of the following concepts as they apply to REACTOR LOW WATER LEVEL: EK1.02 Natural circulation: Plant- Specific</div> <div>References</div> <div>GP-6.2, Rev.51</div> <div>Examinee</div> <div>None</div> <div>References</div> <div></div> <div>Learning</div> <div>LLOT2001A, no specified objective</div> <div>Objective</div> <div></div> <div>Question source</div> <div>New</div> <div>Question history</div> <div>None</div> <div>Cognitive level</div> <div>Lower</div> <div>10 CFR 55</div> <div>41.8, 41.10</div> <div>Comments</div> <div>None</div> </div>	

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

37

ID: 1102564

Points: 1.00

Unit 2 operators have just reduced power, using Reactor Recirc, to stabilize a degrading Main Condenser vacuum.

Plant conditions are now stabilized, with the following:

- Simulated Thermal Power is 71%
- Core Flow is 55 Mlbm/hr
- Recirc Drive Flow is 38,000 gpm

The OPRM ODA's are continuously displaying the following information for the Period Based Detection Algorithm:

	<u>Amplitude</u>	<u>Counts</u>
OPRM 1	1.10	11
OPRM 2	1.11	13
OPRM 3	1.09	15
OPRM 4	1.11	14

WHICH ONE of the following describes the required operator action?

- A. Immediately scram the reactor because the plant is operating in the EXCLUSION REGION
- B. Continue to reduce reactor power by inserting control rods
- C. Immediately scram the reactor because an OPRM UPSCALE TRIP should have occurred
- D. Contact I&C because the OPRM ODAs should not have activated

Answer: B

Answer Explanation

All three of the following conditions must be present for OPRM channel trips to be enabled:

- Reactor Power (STP) $\geq 29.5\%$, **and**
- Total Recirc Drive Flow $< 60\%$ (of 88,000 gpm), **and**
- Reactor Mode Switch in "RUN" position

Therefore, the stem conditions indicate that the OPRMs are in fact enabled.

When enabled, the OPRM ODAs activate; i.e., start displaying. Stem conditions indicate that the PBDA Amplitude / Consecutive Counts combination, for all OPRM channels, is below the OPRM UPSCALE TRIP value of 1.12 / 14. Therefore, the ODAs, by definition, are simply displaying the OPRM "Pre-Trip" (alarm) values...i.e., NO OPRM scram should have occurred.

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

'B' is correct: Continue to reduce reactor power by inserting control rods. This is the action, specifically... "Operator Actions" #4 and #5... directed by the alarm response card for the OPRM PRE-TRIP alarm (ARC-MCR-108, A3). Note - This answer choice does NOT require an examinee, in a closed-book setting, to have memorized ARC actions. Its selection is based solely on the examinee recognizing that inserting rods to reduce power, thereby increasing the margin of safety to the OPRM UPSCALE TRIP setpoint, is the only reasonable action to take.

'A' is wrong: Immediately scram the reactor because the plant is operating in the EXCLUSION REGION. Plausible to the examinee who fails to recognize that no such EXCLUSION REGION exists on the P/F Map when the OPRMs are OPERABLE (which they clearly are). Refer to GP-5 (Steady State Operations), specifically the four versions of the P/F Map shown on Attachment 3, Attachment 4, and Attachment 8 (pages 6 and 7) to validate the fact that only when the OPRMs are inoperable (as illustrated on the two maps of Attachment 8) does an Exclusion Region exist.

'C' is wrong: Immediately scram the reactor because an OPRM UPSCALE TRIP should have occurred. Plausible to the examinee who cannot interpret the OPRM ODA indications; he/she incorrectly concludes that the values displayed are at or above the actual OPRM Trip (i.e., scram) setpoints...they are NOT.

'D' is wrong: Contact I&C because the OPRM ODAs should not have activated. Plausible to the examinee who cannot recall the activation point for the OPRM ODAs.

Question 37 Info		
Question Type:	Multiple Choice	
Status:	Active	
Always select on test?	No	
Authorized for practice?	No	
Points:	1.00	
Time to Complete:	6	
Difficulty:	2.50	
System ID:	1102564	
User-Defined ID:	REV 00, 11/17/14	
Cross Reference Number:	LLOT0074A.16	
Topic:	OPRM ODA Indications - Interpret and determine operator action	
Num Field 1:	3.3	
Num Field 2:	3.3	
Text Field:	215005 A3.03	
Comments:	<div> <div>Level</div> <div>Tier</div> <div>Group</div> <div>KA # and Rating</div> <div>KA Statement</div> <div>References</div> <div>Examinee</div> <div>References</div> <div>Learning Objective</div> <div>Question source</div> </div> <div> <div>RO</div> <div>2</div> <div>1</div> <div>215005 A3.03 (3.3/3.3)</div> <div>215005 APRM / LPRM</div> <div>Ability to monitor automatic operations of the AVERAGE POWER RANGE MONITOR/LOCAL POWER RANGE MONITOR SYSTEM including: A3.03 Meters and recorders</div> <div>ARC-MCR-108, A3, Rev.3</div> <div>GP-5, Rev.168</div> <div>None</div> <div>LLOT0074A.16</div> <div>Bank 989725</div> </div>	

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

	Question history	None
	Cognitive level	Higher
	10 CFR 55	41.7, 41.10
	Comments	None

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

38

ID: 1102594

Points: 1.00

Unit 1 is operating at 100% power when the following occurs:

- Main turbine trips
- ATWS occurs
- RPV pressure peaks at 1170 psig

WHICH ONE of the following identifies the automatic response of the ATWS/ARI and ATWS/RPT functions?

	<u>ARI</u>	<u>RPT</u>
A.	Actuates immediately	Actuates after 9 seconds
B.	Actuates immediately	Actuates immediately
C.	Actuates after 9 seconds	Actuates after 9 seconds
D.	Actuates after 9 seconds	Actuates immediately

Answer: B

Answer Explanation

The following are excerpted from the RRCs lesson plan (LGSOPS0036A, Rev.3, page 4)...

The RRCS logic monitors reactor dome pressure and water level. The logic will cause the immediate energization of the ARI valves when either the reactor high pressure trip setpoint or low water level 2 setpoint is reached, or the manual push buttons are armed and depressed. Energization of the RRCS ARI valves depressurizes the scram air header independent of the logic and vent valves of the RPS system. The valves are sized to allow insertion of all control rods to begin within 15 seconds. Additional immediate RRCS response to the initiation signals include Recirculation System pump motor breaker trip immediately if reactor high pressure is received or 9 seconds after a low water level 2 signal is received.

The ARI function will be initiated by any of the following conditions:

- 1) High RPV pressure (1149 psig), or
- 2) Low RPV level (-38 inches), or
- 3) Manual initiation from MCR

The ATWS/RPT function will be initiated by either of the following conditions:

- 1) High RPV pressure (1149 psig) (sealed-in), or
- 2) Low RPV level (-38 inches with a 9-second time delay) (sealed-in)

'B' is correct: Actuates immediately; Actuates immediately. Correct for the reasons described above.

'A', 'C', 'D' are wrong: Wrong for the reasons described above. Each is plausible to the examinee whose recall cannot distinguish between the several variations of the RRCS logic described above.

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

Question 38 Info		
Question Type:	Multiple Choice	
Status:	Active	
Always select on test?	No	
Authorized for practice?	No	
Points:	1.00	
Time to Complete:	3	
Difficulty:	2.00	
System ID:	1102594	
User-Defined ID:	REV 00, 11/17/14	
Cross Reference Number:	LGSOPS0036A.3	
Topic:	Recall ATWS/ARI and RPT Functions	
Num Field 1:	4.1	
Num Field 2:	4.2	
Text Field:	295037 EK2.03	
Comments:	<div> <div>Level</div> <div>RO</div> </div> <div> <div>Tier</div> <div>1</div> </div> <div> <div>Group</div> <div>1</div> </div> <div> <div>KA # and Rating</div> <div>295037 EK2.03 (4.1/4.2)</div> </div> <div> <div>KA Statement</div> <div>295037 SCRAM Condition Present and Reactor Power Above APRM Downscale or Unknown Knowledge of the interrelations between SCRAM CONDITION PRESENT AND REACTOR POWER ABOVE APRM DOWNSCALE OR UNKNOWN and the following: EK2.03 ARI/RPT/ATWS: Plant-Specific</div> </div> <div> <div>References</div> <div>LGSOPS0036A, RRCS lesson plan</div> </div> <div> <div>Examinee References</div> <div>None</div> </div> <div> <div>Learning Objective</div> <div>LGSOPS0036A.3</div> </div> <div> <div>Question source</div> <div>Bank 561532</div> </div>	

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

	Question history	None
	Cognitive level	Lower
	10 CFR 55	41.7
	Comments	None

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

39

ID: 1102599

Points: 1.00

WHICH ONE of the following describes the reason for performing an emergency blowdown in response to high drywell temperature, per the T-102 (Primary Containment Control) Bases?

- A. Maintain ADS SRV availability
- B. Prevent exceeding the Tech Spec LCO limit for drywell temperature
- C. Prevent RPV level instrument reference leg boiling
- D. Prevent exceeding the containment Heat Capacity Temperature Limit (HCTL)

Answer: A

Answer Explanation

The complete explanation (with respect to the context of this question) is found on pages 128 thru 130 of the T-102 Bases, specifically regarding Steps DW/T-10 thru 13. All of that discussion reduces to the following: 340°F is the maximum temperature at which the ADS SRVs are environmentally qualified; it is also the Drywell design temperature.

'A' is correct: Maintain ADS SRV availability. Correct for the reasons described above.

'B' is wrong: Prevent exceeding the Tech Spec LCO limit for drywell temperature. The Tech Spec LCO 3.6.1.7 Drywell Temperature limit is 145°F. Plausible to the examinee who forgets that the drywell temperature is already well above 145°F by the time operators arrive at Step DW/T-10.

'C' is wrong: Prevent RPV level instrument reference leg boiling. Plausible to the examinee who doesn't recall the basis but who does recall that elevated drywell temperatures can lead to RPV level instrument inaccuracies due to reference leg boiling.

'D' is wrong: Prevent exceeding the containment Heat Capacity Temperature Limit (HCTL). Plausible to the examinee who confuses the suppression pool temperature focus of HCTL with elevated drywell temperatures.

Question 39 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	3
Difficulty:	2.00
System ID:	1102599
User-Defined ID:	REV 00, 11/17/14
Cross Reference Number:	LLOT1560.5
Topic:	T-102, Recall basis for step DW/T-10 (Blowdown when cannot maintain below 340F)
Num Field 1:	3.6
Num Field 2:	397
Text Field:	295028 EK3.01
Comments:	Level RO

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

40

ID: 1102663

Points: 1.00

Unit 1 is operating at 100% power.

The running TECW Pump trips and the standby pump fails to start.

WHICH ONE of the following is an expected plant/system response?

- A. Isophase Bus cooler high temperature
- B. Main Turbine Lube Oil from cooler high temperature
- C. Stator Cooling return high temperature
- D. Service Air Compressor aftercooler high temperature

Answer: D

Answer Explanation

The Service Air Compressors are cooled by TECW. The Isophase Bus uses Service Water for cooling, as do Main Turbine Lube Oil and the Stator Cooling Water heat exchangers.

'D' is correct: Service Air Compressor aftercooler high temperature. Correct the reasons described above.

'A' is wrong: Isophase Bus cooler high temperature. Plausible to the examinee who incorrectly concludes that systems/components associated with the Main Turbine/Generator (in the Turbine Enclosure) must use TECW as their source of cooling.

'B' is wrong: Main Turbine Lube Oil from cooler high temperature. Plausible for the same reason as for choice 'A'.

'C' is wrong: Stator Cooling return high temperature. Plausible for the same reason as for choice 'A'.

Question 40 Info		
Question Type:	Multiple Choice	
Status:	Active	
Always select on test?	No	
Authorized for practice?	No	
Points:	1.00	
Time to Complete:	3	
Difficulty:	2.00	
System ID:	1102663	
User-Defined ID:	REV 00, 11/17/14	
Cross Reference Number:	LLOT0014.3	
Topic:	Loss of TECW Pumps - Predict Plant/System Response	
Num Field 1:	3.5	
Num Field 2:	3.6	
Text Field:	295018 AK1.01	
Comments:	Level	RO
	Tier	1

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

	Group	1
	KA # and Rating	295018 AK1.01 (3.5/3.6)
	KA Statement	295018 Partial or Total Loss of CCW Knowledge of the operational implications of the following concepts as they apply to PARTIAL OR COMPLETE LOSS OF COMPONENT COOLING WATER: AK1.01 Effects on component/system operations
	References	LLOT0014 lesson plan
	Examinee	None
	References	
	Learning	LLOT0014.3
	Objective	
	Question source	Bank 561330
	Question history	None
	Cognitive level	Lower
	10 CFR 55	41.4
	Comments	None

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

41

ID: 1102684

Points: 1.00

Both Units are operating at 100% power.

WHICH ONE of the following will **directly** produce a FULL SCRAM on one of the Units?

- A. Unit 1 - Fast Closure of TCVs 1 and 2
- B. Unit 1 - Fast Closure of TCV 1 with Closure of TSV 2
- C. Unit 2 - Closure of TSVs 2 and 3
- D. Unit 2 - Fast Closure of TCV 3 with Closure of TSV 4

Answer: A

Answer Explanation

Refer to the UNIT 1 RPS Elementary Drawings C71-1020-E-006, 007, and 009. Refer to the UNIT 2 RPS Elementary Drawings C71-1020-E-020, Sheets 6, 7, and 8. NOTE - These drawings use the abbreviation "MSV" (Main Stop Valve) as synonymous with TSV.

From these drawings, we can verify the following regarding Unit 1:

- Coincident closure of MSV 3 and 4 trips RPS Channel A1
- Coincident closure of MSV 1 and 2 trips RPS Channel A2
- Coincident closure of MSV 1 and 3 trips RPS Channel B1
- Coincident closure of MSV 2 and 4 trips RPS Channel B2
- Fast closure of TCV 1 trips RPS Channel B1
- Fast closure of TCV 2 trips RPS Channel A1
- Fast closure of TCV 3 trips RPS Channel B2
- Fast closure of TCV 4 trips RPS Channel A2

From this, we discover the following regarding Unit 1:

- No two MSVs are sufficient to satisfy the RPS one-out-of-two-twice logic for a Full Scram; it takes a minimum of three MSVs
- The "right" combination of two TCVs (for example: TCVs 1 and 2) will satisfy the RPS Full Scram logic

From these drawings, we can verify the following regarding Unit 2:

- The MSV logic is identical to that for Unit 1
- Fast closure of TCV 1 trips Channel B1
- Fast closure of TCV 2 trips Channel B2
- Fast closure of TCV 3 trips Channel A1
- Fast closure of TCV 4 trips Channel A2

From this, we discover the following regarding Unit 2:

- No two MSVs are sufficient to satisfy the RPS one-out-of-two-twice logic for a Full Scram; it takes a minimum of three MSVs
- The "right" combination of two TCVs (for example: TCVs 1 and 3) will satisfy the RPS Full Scram logic

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

'A' is correct: Unit 1 - Fast Closure TCVs 1 and 2. Correct for the reasons described above.

'B' is wrong: Unit 1 - Fast Closure of TCV 1 with Closure of TSV 2. The single TCV can trip only a single RPS Channel; the single TSV can't trip an RPS Channel. Therefore, the combination suggested by this answer choice produces only a half-scram.

'C' is wrong: Unit 2 - Closure of TSVs 2 and 3. Where the "right" combination of TSVs (for example: TSV 3 and 4) can produce a half-scram, no two TSVs (by themselves) can produce a full scram.

'D' is wrong: Unit 2 - Fast Closure of TCV 3 with Closure of TSV 4. The single TCV can trip only a single RPS Channel; the single TSV can't trip an RPS Channel. Therefore, the combination suggested by this answer choice produces only a half-scram.

All of the distracters are plausible because each either suggests that there is "right" combination of 2 TSVs which produce a full scram, or suggests that there is a "right" TSV/TCV combination which can produce a full scram. The turbine trip logic, historically, is the least understood (and so most often confused) of the logics that input to RPS.

Question 41 Info		
Question Type:	Multiple Choice	
Status:	Active	
Always select on test?	No	
Authorized for practice?	No	
Points:	1.00	
Time to Complete:	4	
Difficulty:	2.50	
System ID:	1102684	
User-Defined ID:	REV 00, 11/17/14	
Cross Reference Number:	LLOT0071.IL4	
Topic:	Recognize Turbine Trip logic that produces an RPS Full Scram	
Num Field 1:	3.6	
Num Field 2:	3.7	
Text Field:	295006 AK2.04	
Comments:	<div> <div>Level</div> <div>RO</div> </div> <div> <div>Tier</div> <div>1</div> </div> <div> <div>Group</div> <div>1</div> </div> <div> <div>KA # and Rating</div> <div>295006 AK2.04 (3.6/3.7)</div> </div> <div> <div>KA Statement</div> <div>295006 SCRAM</div> </div> <div> <div>References</div> <div> Knowledge of the interrelations between SCRAM and the following: AK2.04 Turbine trip logic: Plant-Specific C71-1020-E-006, Rev.25 C71-1020-E-007, Rev.28 C71-1020-E-009, Rev.11 C71-1020-E-020, Sheet 6, Rev.10 C71-1020-E-020, Sheet 7, Rev.11 C71-1020-E-020, Sheet 9, Rev.5 </div> </div> <div> <div>Examinee References</div> <div>None</div> </div> <div> <div>Learning Objective</div> <div>LLOT0071.IL4</div> </div>	

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

	Question source	New
	Question history	None
	Cognitive level	Lower
	10 CFR 55	41.7
	Comments	None

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

42

ID: 1102685

Points: 1.00

Unit 2 plant conditions:

- OPCON 3
- 2A RHR is in Shutdown Cooling
- HV-51-2F003A ('A' RHR HX Outlet) is closed
- HIC-51-203A ('A' RHR HX Outlet Bypass) is 30% open
- Reactor water temperature is 275°F, steady

A controller malfunction causes HIC-51-203A to fully close.

WHICH ONE of the following describes the effect on actual reactor water temperature and temperature indicated at TE-51-2N004A ('A' RHR HX Inlet Temp), 10 minutes later?

	<u>Actual Reactor Water Temperature</u>	<u>TE-51-2N004A Indication</u>
A.	Rises	Rises
B.	Rises	Lowers
C.	Lowers	Rises
D.	Lowers	Lowers

Answer: B

Answer Explanation

The F003A (HX Outlet) is already closed; therefore, when the 203A fails closed, all flow through the RHR HX stops (i.e., all flow goes through the HX Bypass, F048A). Thus, with less cooling the actual reactor water temperature will RISE. However, with flow through the HX isolated, temperature in the HX piping will LOWER.

'B' is correct: Rises; Lowers. Correct for the reasons described above.

'A' is wrong: Rises; Rises. The difficult concept (least understood and most counter-intuitive) is that the isolation of flow through the HX results in that inlet temperature lowering. Plausible for that reason.

'C' is wrong: Lowers; Rises. Plausible to the weaker examinee who doesn't understand the flowpaths that result from the failing-closed on the HX inlet valve.

'D' is wrong: Lowers; Lowers. Plausible for the same reason as that for choice 'C'.

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

Question 42 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	4
Difficulty:	2.50
System ID:	1102685
User-Defined ID:	REV 00, 11/17/14
Cross Reference Number:	LLOT0051
Topic:	Predict Impact of RHR HX Bypass Valve failing closed while in SDC
Num Field 1:	3.7
Num Field 2:	3.7
Text Field:	205000 A4.07
Comments:	<div> <div>Level</div> <div>RO</div> </div> <div> <div>Tier</div> <div>2</div> </div> <div> <div>Group</div> <div>1</div> </div> <div> <div>KA # and Rating</div> <div>205000 A4.07 (3.7/3.7)</div> </div> <div> <div>KA Statement</div> <div>205000 Shutdown Cooling Ability to manually operate and/or monitor in the control room: A4.07 Reactor temperatures</div> </div> <div> <div>References</div> <div>LLOT0051 lesson plan</div> </div> <div> <div>Examinee</div> <div>None</div> </div> <div> <div>References</div> <div></div> </div> <div> <div>Learning</div> <div>LLOT0051.14</div> </div> <div> <div>Objective</div> <div></div> </div> <div> <div>Question source</div> <div>Bank 562332</div> </div> <div> <div>Question history</div> <div>None</div> </div> <div> <div>Cognitive level</div> <div>Higher</div> </div> <div> <div>10 CFR 55</div> <div>41.7</div> </div> <div> <div>Comments</div> <div>None</div> </div>

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

43

ID: 1102687

Points: 1.00

Unit 1 is operating at 100% power.

A logic failure causes an inadvertent HPCI initiation, with the following:

- HPCI injects into the RPV
- White SEAL-IN light is LIT at 10C647; the light will not reset

WHICH ONE of the following:

- (1) identifies whether reactor power will reach an APRM Upscale scram setpoint (Yes/No) if operators take no action to terminate the HPCI injection, and
 - (2) describes the operator action to terminate the HPCI injection, per S55.2.A (HPCI Shutdown from Automatic or Manual Initiation)?
- A. (1) No
(2) Depress and hold the Turbine Trip pushbutton, close the HPCI Steam Supply Valve, then release the Turbine Trip pushbutton
 - B. (1) Yes
(2) Depress and release the HPCI Manual Isolation pushbutton
 - C. (1) No
(2) Depress and release the HPCI Manual Isolation pushbutton
 - D. (1) Yes
(2) Depress and hold the Turbine Trip pushbutton, close the HPCI Steam Supply Valve, then release the Turbine Trip pushbutton

Answer: C

Answer Explanation

The LGS simulator model (in fidelity with the actual plant response) shows that reactor power will peak at approximately 107%, well below the two-loop APRM STP Flow-Biased scram setpoint of [0.65 (W) + 61.7%] (clamped at 116.6%), as well as below the Neutron Flux setpoint, clamped at 118.3%. [Refer to alarm response card ARC-MCR-108, B3 to validate these setpoints.]

Per S55.2.A, Steps 4.2 through 4.6, if the SEAL-IN light won't reset (i.e., the initiation signal is still present), the operator must manually isolate HPCI (per Step 4.5.1) in order to shut down the HPCI turbine and stop injection. Conversely, if the SEAL-IN light will reset, the operator is directed to manually trip the turbine (with the Turbine Trip pushbutton), close the HPCI Steam Inlet (1F001), then release the Turbine Trip pushbutton.

'C' is correct: (1) No; (2) Depress and release the HPCI Manual Isolation pushbutton. Correct for the reasons described above.

'A' is wrong: (1) No; (2) Depress and hold the Turbine Trip pushbutton, close the HPCI Steam Supply Valve, then release the Turbine Trip pushbutton. Part (2) is plausible to the examinee who either fails to recognize the meaning of the un-resettable SEAL-IN light (i.e., the initiation signal is sealed-in), or who fails to recognize the impact of that sealed-in initiation signal (i.e., that the HPCI turbine will start up, again, after the Trip pushbutton is released).

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

'B' is wrong: (1) Yes; (2) Depress and release the HPCI Manual Isolation pushbutton. Part (1) is plausible to the examine who believes that the (HPCI) cold water injection is severe enough so as to cause a scram.

'D' is wrong: (1) Yes; (2) Depress and hold the Turbine Trip pushbutton, close the HPCI Steam Supply Valve, then release the Turbine Trip pushbutton. Plausible for the same reasons as that for choices 'A' and 'B'.

Question 43 Info		
Question Type:	Multiple Choice	
Status:	Active	
Always select on test?	No	
Authorized for practice?	No	
Points:	1.00	
Time to Complete:	4	
Difficulty:	2.50	
System ID:	1102687	
User-Defined ID:	REV 00, 11/17/14	
Cross Reference Number:	LGSOPS1540	
Topic:	Inadvertent HPCI Startup - Diagnose, Predict Power Resoonse, and Recall Operator Action	
Num Field 1:	3.9	
Num Field 2:	4.3	
Text Field:	206000 A2.17	
Comments:	<div> <div>Level</div> <div>RO</div> </div> <div> <div>Tier</div> <div>2</div> </div> <div> <div>Group</div> <div>1</div> </div> <div> <div>KA # and Rating</div> <div>206000 A2.17 (3.9/4.3)</div> </div> <div> <div>KA Statement</div> <div>206000 HPCI Ability to (a) predict the impacts of the following on the HIGH PRESSURE COOLANT INJECTION SYSTEM ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: A2.17 †HPCI inadvertent initiation: BWR-2,3,4</div> </div> <div> <div>References</div> <div>OT-104, Rev.51 S55.2.A, Rev.15</div> </div> <div> <div>Examinee References</div> <div>None</div> </div> <div> <div>Learning Objective</div> <div>LGSOPS1540, no specified objective</div> </div> <div> <div>Question source</div> <div>New</div> </div> <div> <div>Question history</div> <div>None</div> </div> <div> <div>Cognitive level</div> <div>Higher</div> </div> <div> <div>10 CFR 55</div> <div>41.5, 41.10</div> </div> <div> <div>Comments</div> <div>None</div> </div>	

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

44

ID: 1102692

Points: 1.00

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

- A ground occurs on 2PP02 125V DC Power Distribution Panel 2BD108
- The ground causes the trip of breaker 2PP02-02

WHICH ONE of the following identifies:

- (1) the Unit 2 loads that have de-energized, and
(2) the operational implication?

- A. (1) Some Unit 2 MCR annunciator panels
(2) Plant operation may continue but operators must closely monitor systems associated with the de-energized annunciator panels
- B. (1) Some Unit 2 MCR annunciator panels
(2) GP-3 normal plant shutdown is required
- C. (1) All Unit 2 MCR annunciator panels
(2) GP-3 normal plant shutdown is required
- D. (1) All Unit 2 MCR annunciator panels
(2) Plant operation may continue but operators must closely monitor systems associated with the de-energized annunciator panels

Answer: A

Answer Explanation

Refer to S95.9.G U/2 (125/250 VDC BALANCE OF PLANT STATION BATTERY GROUND INVESTIGATION), Attachment 2, pages 1 of 12 and 2 of 12, which show that only some MCR annunciator panels (specifically, panels 207, 208, 209, 211, and 212) are powered from breaker 2PP02-02. Refer to ON-122 (Loss of Main Control Room Annunciators), where step 2.2 directs operators to closely monitor the affected systems; however, there is no requirement for shutting down the plant (even in the event that all MCR annunciators were lost).

'A' is correct: (1) Some Unit 2 MCR annunciator panels; (2) Plant operation may continue but operators must closely monitor systems associated with the de-energized annunciator panels.
Correct for the reasons described above.

'B' is wrong: (1) Some Unit 2 MCR annunciator panels; (2) GP-3 normal plant shutdown is required.
Plausible because ON-122 is not an often-trained on abnormal operating procedure. Inexperienced operator candidates could easily believe that, in the name of "conservative decision-making", a normal plant shutdown is prudently called-for.

'C' is wrong: (1) All Unit 2 MCR annunciator panels; (2) GP-3 normal plant shutdown is required. Part (2) is plausible for the same reason as for choice 'B'. Part (1) is plausible because power distribution to the MCR annunciators is not a well-known element of systems knowledge. Should the examinee believe that "all" panels have de-energized, then he/she will be especially tempted to believe Part (2); i.e., that a GP-3 normal plant shutdown is required.

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

'D' is wrong: (1) All Unit 2 MCR annunciator panels; (2) Plant operation may continue but operators must closely monitor systems associated with the de-energized annunciator panels. Part (1) is plausible for the same reason as that for choice 'C'.

Question 44 Info		
Question Type:	Multiple Choice	
Status:	Active	
Always select on test?	No	
Authorized for practice?	No	
Points:	1.00	
Time to Complete:	4	
Difficulty:	2.50	
System ID:	1102692	
User-Defined ID:	REV 00, 11/17/14	
Cross Reference Number:		
Topic:	DC Ground - Predict system impact and required action	
Num Field 1:	2.8	
Num Field 2:	3.2	
Text Field:	263000 A2.01	
Comments:	<div> <div>Level</div> <div>RO</div> <div>Tier</div> <div>2</div> <div>Group</div> <div>1</div> <div>KA # and Rating</div> <div>263000 A2.01 (2.8/3.2)</div> <div>KA Statement</div> <div>263000 DC Electrical Distribution Ability to (a) predict the impacts of the following on the D.C. ELECTRICAL DISTRIBUTION ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: A2.01 Grounds</div> <div>References</div> <div>ARC-MCR-226, E1, Rev.3 ON-122, Rev.18</div> <div>Examinee References</div> <div>None</div> <div>Learning Objective</div> <div>LGSOPS0095, no specified objective</div> <div>Question source</div> <div>New</div> <div>Question history</div> <div>None</div> <div>Cognitive level</div> <div>Higher*</div> <div>10 CFR 55</div> <div>41.5, 41.10</div> <div>Comments</div> <div>*Justification for Higher Cognitive categorization: Given the pairing of the Part (1) answer choices ("Some" versus "All"), the Candidate must necessarily comprehend that no single DC distribution panel breaker would ever be used to power "All" of the MCR annunciator panels.</div> </div>	

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

45

ID: 1104186

Points: 1.00

Unit 1 is operating at 100% power, steady.

The 'B' CRD Flow Control Valve (F002B) is in service when the following occurs:

- Instrument Air tubing breaks off at its connection to the F002B valve positioner

WHICH ONE of the following describes a resulting CRD related indication at 10C603?

- A. DRIVE WATER D/P reads fully upscale
- B. CHARGING WATER PRESSURE reads lower than normal
- C. F002B Green light ON, Red light OFF
- D. Flow Controller OUTPUT signal reads 100%

Answer: D

Answer Explanation

Refer to P&ID M-0046, Sheet 001, coordinates C-D/2, which shows that the CRD FCVs (F002A/B) fail closed (F.C.) on loss of air.

'D' is correct: Flow Controller OUTPUT signal reads 100%. When the FCV fails closed, the Flow Controller (FC 1R600) "sees" the dramatic reduction in flow through its Flow Element (FE 1N003) and responds by attempting to restore system flow to its normal Flow Controller setpoint of approximately 60 gpm. As such, its OUTPUT signal goes from a pre-failure value of about 30% to a fully-upscale value of 100%.

'A' is wrong: DRIVE WATER D/P reads fully upscale. Normal Drive Water D/P reads about 250 psid, established by the combination of the in-service FCV position and the throttled position of the Pressure Control Valve, F003. When F002B fails closed, the Drive Water d/p goes to essentially 0 psid. Plausible to the examinee who either believes that F002B is a fail-open valve, or who does not comprehend the cause-effect relationship between F002B position and Drive Water d/p.

'B' is wrong: CHARGING WATER PRESSURE reads lower than normal. Normally, there is no flow through the Charging Water Header and so the Charging Water Pressure indicator reads essentially the discharge pressure (minus some amount of head loss) of the running CRD pump (about 1400 psig). When F002B fails closed, the reduced flow through the Cooling Water Header results in a slight (approximately 40 psig) rise in the "backpressure" felt by the Charging Water Header pressure transmitter. Plausible to the examinee who lacks a solid comprehension of these system dynamics, or who simply believes that F002B fails open.

'C' is wrong: F002B Green light ON, Red light OFF. The F002 valves have a mechanical stop near their closed seats, preventing the valve disk from ever going fully closed (thereby ensuring a minimal amount of cooling water flow is always going to the CRDMs. As such, the FCV always has dual-position indication (Green light ON, Red light ON). Plausible to the examinee who recall that F002B fails closed, but forgets about the mechanical stop near its closed seat.

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

Question 45 Info																														
Question Type:	Multiple Choice																													
Status:	Active																													
Always select on test?	No																													
Authorized for practice?	No																													
Points:	1.00																													
Time to Complete:	4																													
Difficulty:	2.50																													
System ID:	1104186																													
User-Defined ID:	REV 00, 11/17/14																													
Cross Reference Number:	LLOT0046.9																													
Topic:	Loss of Instrument Air to In-service CRD FCV - Predict resulting CRD indications																													
Num Field 1:	3.3																													
Num Field 2:	3.4																													
Text Field:	300000 K3.02																													
Comments:	<table><tr><td>Level</td><td>RO</td></tr><tr><td>Tier</td><td>2</td></tr><tr><td>Group</td><td>1</td></tr><tr><td>KA # and Rating</td><td>300000 K3.02 (3.3/3.4)</td></tr><tr><td>KA Statement</td><td>300000 Instrument Air Knowledge of the effect that a loss or malfunction of the (INSTRUMENT AIR SYSTEM) will have on the following: K3.02 Systems having pneumatic valves and controls</td></tr><tr><td>References</td><td>P&ID M-0046, Sheet 001, Rev.51</td></tr><tr><td>Examinee</td><td>None</td></tr><tr><td>References</td><td></td></tr><tr><td>Learning Objective</td><td>LLOT0046.9</td></tr><tr><td>Question source</td><td>New</td></tr><tr><td>Question history</td><td>None</td></tr><tr><td>Cognitive level</td><td>Higher</td></tr><tr><td>10 CFR 55</td><td>41.7</td></tr><tr><td>Comments</td><td>None</td></tr></table>		Level	RO	Tier	2	Group	1	KA # and Rating	300000 K3.02 (3.3/3.4)	KA Statement	300000 Instrument Air Knowledge of the effect that a loss or malfunction of the (INSTRUMENT AIR SYSTEM) will have on the following: K3.02 Systems having pneumatic valves and controls	References	P&ID M-0046, Sheet 001, Rev.51	Examinee	None	References		Learning Objective	LLOT0046.9	Question source	New	Question history	None	Cognitive level	Higher	10 CFR 55	41.7	Comments	None
Level	RO																													
Tier	2																													
Group	1																													
KA # and Rating	300000 K3.02 (3.3/3.4)																													
KA Statement	300000 Instrument Air Knowledge of the effect that a loss or malfunction of the (INSTRUMENT AIR SYSTEM) will have on the following: K3.02 Systems having pneumatic valves and controls																													
References	P&ID M-0046, Sheet 001, Rev.51																													
Examinee	None																													
References																														
Learning Objective	LLOT0046.9																													
Question source	New																													
Question history	None																													
Cognitive level	Higher																													
10 CFR 55	41.7																													
Comments	None																													

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

46

ID: 1102745

Points: 1.00

WHICH ONE of the following identifies the circuit breaker that supplies power to the solenoid for the Unit 1 ARI Valve SV-1F163A?

- A. 1PP01-09
- B. 1PPA1-09
- C. 10Y101-32
- D. 1AY160-32

Answer: B

Answer Explanation

Each ARI valve has a single DC-powered solenoid (refer to P&ID M-0047, sheet 1, coordinate H-5 to validate for two of these valves (SV-1F163A(B))). The solenoid receives its power from its respective Division (1 or 2) of the Redundant Reactivity Control System (RRCS), which receives its power from the respective Division (1 or 2) 125 VDC bus. In the context of this question, refer to RRCS valve/breaker alignment procedure S36.1.A (COL), page 3, Step 1, which shows that 125 VDC breaker 1PPA1-09 has the "Apparatus Description" of: "RRCS PNL BREAKER 10C634 29-A10209." Refer to RRCS Elementary Drawing C22-1050-E-102, sheet 3, which shows that the Channel 'A' (i.e., Div 1) ARI Valve solenoids are powered from the 124 VDC Bus 'A' panel 1AD102, circuit #9. This description is synonymous with the 1PPA1-09 label for this breaker.

'B' is correct: 1PPA1-09. Correct for the reasons described above.

'A' is wrong: 1PP01-09. This choice refers to breaker #9 of 125 VDC distribution panel 1PP01, which is a Non-Safeguards (non-Divisional) bus, not a Division bus. Refer to alarm response card ARC-MCR-125, A3 to validate. Because this Non-Safeguards DC panel does in fact supply some of the power requirements for RRCS (e.g., as shown for Step 8 of the S36.1.A (COL) procedure cited earlier), this choice is plausible to the examinee who mistakenly believes that a non-Divisional bus might in fact supply power to Divisional (Safeguards) related components, such as the ARI Valve solenoids. It may well be that the examinee does not even recognize that those solenoids are in fact "safety-related" components.

'C' is wrong: 10Y101-32. This is a 120 VAC distribution panel, not a DC one. Plausible to the examinee who fails to recall that the ARI Valve solenoids are DC-powered. This panel/breaker does in fact supply some of the power to RRCS, as shown at Step 4 of the same procedure cited earlier.

'D' is wrong: 1AY160-32. This is the 120 VAC RPS System 'A' distribution panel, not a DC panel. Plausible to the examinee who fails to recall that the ARI Valve solenoids are DC-powered, and so mistakenly concludes that it would make sense that the solenoids are powered from the same source as the RPS scram solenoid pilot valves.

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

Question 46 Info																												
Question Type:	Multiple Choice																											
Status:	Active																											
Always select on test?	No																											
Authorized for practice?	No																											
Points:	1.00																											
Time to Complete:	4																											
Difficulty:	2.50																											
System ID:	1102745																											
User-Defined ID:	REV 00, 11/17/14																											
Cross Reference Number:	LLOT0046																											
Topic:	Recognize power supply to the ARI Valve solenoids																											
Num Field 1:	4.5																											
Num Field 2:	4.5																											
Text Field:	201001 K2.05																											
Comments:	<table><tr><td>Level</td><td>RO</td></tr><tr><td>Tier</td><td>2</td></tr><tr><td>Group</td><td>2</td></tr><tr><td>KA # and Rating</td><td>201001 K2.05 (4.5/4.5)</td></tr><tr><td>KA Statement</td><td>201001 CRD Hydraulic Knowledge of electrical power supplies to the following: K2.05 Alternate rod insertion valve solenoids: Plant-Specific</td></tr><tr><td>References</td><td>P&ID M-0047, sheet 1, Rev.47 C22-1050-E-102, sheet 3, Rev.6 1S36.1.A (COL), Rev.4 ARC-MCR-125, A3, Rev.0</td></tr><tr><td>Examinee References</td><td>None</td></tr><tr><td>Learning Objective</td><td>LLOT0046, no specified objective</td></tr><tr><td>Question source</td><td>New</td></tr><tr><td>Question history</td><td>None</td></tr><tr><td>Cognitive level</td><td>Higher*</td></tr><tr><td>10 CFR 55</td><td>41.7</td></tr><tr><td>Comments</td><td>*Justification for Higher Cognitive categorization: The answer choices require the examinee to recognize that the 1PPA1 label designates a Divisional (Safeguards) bus, whereas the 1PP01 label designates a non-Safeguards bus. The question also requires the examinee to recognize that the solenoids are in fact "Safety-related" components, thereby warranting Safeguards electrical power, and that they are DC-powered components.</td></tr></table>		Level	RO	Tier	2	Group	2	KA # and Rating	201001 K2.05 (4.5/4.5)	KA Statement	201001 CRD Hydraulic Knowledge of electrical power supplies to the following: K2.05 Alternate rod insertion valve solenoids: Plant-Specific	References	P&ID M-0047, sheet 1, Rev.47 C22-1050-E-102, sheet 3, Rev.6 1S36.1.A (COL), Rev.4 ARC-MCR-125, A3, Rev.0	Examinee References	None	Learning Objective	LLOT0046, no specified objective	Question source	New	Question history	None	Cognitive level	Higher*	10 CFR 55	41.7	Comments	*Justification for Higher Cognitive categorization: The answer choices require the examinee to recognize that the 1PPA1 label designates a Divisional (Safeguards) bus, whereas the 1PP01 label designates a non-Safeguards bus. The question also requires the examinee to recognize that the solenoids are in fact "Safety-related" components, thereby warranting Safeguards electrical power, and that they are DC-powered components.
Level	RO																											
Tier	2																											
Group	2																											
KA # and Rating	201001 K2.05 (4.5/4.5)																											
KA Statement	201001 CRD Hydraulic Knowledge of electrical power supplies to the following: K2.05 Alternate rod insertion valve solenoids: Plant-Specific																											
References	P&ID M-0047, sheet 1, Rev.47 C22-1050-E-102, sheet 3, Rev.6 1S36.1.A (COL), Rev.4 ARC-MCR-125, A3, Rev.0																											
Examinee References	None																											
Learning Objective	LLOT0046, no specified objective																											
Question source	New																											
Question history	None																											
Cognitive level	Higher*																											
10 CFR 55	41.7																											
Comments	*Justification for Higher Cognitive categorization: The answer choices require the examinee to recognize that the 1PPA1 label designates a Divisional (Safeguards) bus, whereas the 1PP01 label designates a non-Safeguards bus. The question also requires the examinee to recognize that the solenoids are in fact "Safety-related" components, thereby warranting Safeguards electrical power, and that they are DC-powered components.																											

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

47

ID: 1102751

Points: 1.00

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

- One cell fails (and is bypassed) on the 2A ASD

No operator action is taken.

WHICH ONE of the following:

- (1) describes how reactor power responds, and
- (2) identifies whether a 2A ASD SPEED HOLD alarm is sealed-in (Yes/No)?

- A. (1) Lowers approximately 2-3%
(2) No
- B. (1) Remains unchanged
(2) Yes
- C. (1) Lowers approximately 2-3%
(2) Yes
- D. (1) Remains unchanged
(2) No

Answer: C

Answer Explanation

Refer to S43.1.F, Attachment 2 FRR Alarm List, FRR # 2.1.1 (Cell Fault), which shows that a single cell fault allows the ASD to continue operating but with a Speed Hold having been automatically applied (locking up the ASD at its resulting speed)...refer to alarm response card ARC-MCR-211, C3, for the alarm that will accompany the Speed Hold. What's not mentioned on this Alarm List table is that the cell failure causes a speed drop of about 100-200 rpm. This speed drops cause Total Core Flow to drop enough so as to result in a reactor power drop of about 2-3%.

'C' is correct: (1) Lowers approximately 2-3%; (2) Yes. Correct for the reasons described above.

'A' is wrong: (1) Lowers approximately 2-3%; (2) No. Part (2) is plausible to the examinee who does recognize that the ASD remains operating (i.e., doesn't trip) but who fails to recall the Speed Hold that results from the cell failure.

'B' is wrong: (1) Remains unchanged; (2) Yes. Part (1) is plausible to the examinee who does recognize that the ASD remains operating but who fails to recall the speed drop (and, therefore, the reactor power drop) that occurs from the cell failure.

'D' is wrong: (1) Remains unchanged; (2) No. Plausible for reasons similar to that for choices 'A' and 'B'.

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

Question 47 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	3
Difficulty:	2.00
System ID:	1102751
User-Defined ID:	REV 00, 11/17/14
Cross Reference Number:	
Topic:	Predict reactor power response to ASD single-cell failure
Num Field 1:	3.4
Num Field 2:	3.4
Text Field:	202002 A3.02
Comments:	<div> <div>Level</div> <div>RO</div> </div> <div> <div>Tier</div> <div>2</div> </div> <div> <div>Group</div> <div>2</div> </div> <div> <div>KA # and Rating</div> <div>202002 A3.02 (3.4/3.4)</div> </div> <div> <div>KA Statement</div> <div>202002 Recirc Flow Control Ability to monitor automatic operations of the RECIRCULATION FLOW CONTROL SYSTEM including: A3.02 Lights and alarms</div> </div> <div> <div>References</div> <div>S43.1.F, Rev.1 ARC-MCR-211, C3, Rev.2</div> </div> <div> <div>Examinee References</div> <div>None</div> </div> <div> <div>Learning Objective</div> <div>LGSOPS0043B.2C</div> </div> <div> <div>Question source</div> <div>New</div> </div> <div> <div>Question history</div> <div>None</div> </div> <div> <div>Cognitive level</div> <div>Higher</div> </div> <div> <div>10 CFR 55</div> <div>41.7</div> </div> <div> <div>Comments</div> <div>None</div> </div>

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

48

ID: 1102752

Points: 1.00

A localized Instrument Air line break results in the loss of air to the Unit 2 Fuel Pool Cooling and Cleanup System.

WHICH ONE of the following is an expected plant/system response?

- A. Spent Fuel Pool water clarity degrades
- B. Spent Fuel Pool water temperature rises
- C. Spent Fuel Pool level lowers
- D. Skimmer Surge Tank level lowers

Answer: A

Answer Explanation

The Skimmer Surge Tank Makeup Valve (HV-53-207, an AOV) fails open on a loss of air; therefore, Demin Water is continuously supplied to the tank, causing its level to rise, not lower (refer to P&ID M-0053, sheet 4, coord. H-3). The loss of air has no impact on Spent Fuel Pool level itself. The FPCC Filter-Demin Valves (AOVs; FV-C 203, for example) fail closed on a loss of air; thus, spent fuel pool water filtration stops, resulting in a degradation of the water clarity (refer to P&ID M-0054, sheet 2, coord. F-6). Because the Filter-Demin Valves fail so as to stop flow through the Filter-Demins, the Filter-Demin Bypass Valve (HV-54-205, an AOV) is designed to fail open, to ensure continued system operation to maintain spent fuel pool water temperature unchanged (refer to P&ID M-0053, sheet 4, coord. E-2).

'A' is correct: Spent Fuel Pool water clarity degrades. Correct for the reasons described above.

'B' is wrong: Spent Fuel Pool water temperature rises. Plausible to the examinee who either does not recall the failure mode for the F-D Bypass Valve, or who simply doesn't recall that the valve exists.

'C' is wrong: Spent Fuel Pool level lowers. Plausible to the examinee who mistakenly believes that the skimmer surge tank makeup valve fails closed; as such, the surge tank level lowers and so too does the spent fuel pool level.

'D' is wrong: Skimmer Surge Tank level lowers. Plausible to the examinee who fails to recall the failure mode for the skimmer surge tank makeup valve, as described above.

EXAMINATION ANSWER KEY

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Question 48 Info		
Question Type:	Multiple Choice	
Status:	Active	
Always select on test?	No	
Authorized for practice?	No	
Points:	1.00	
Time to Complete:	4	
Difficulty:	3.00	
System ID:	1102752	
User-Defined ID:	REV 00, 11/17/14	
Cross Reference Number:	LGSOPS0053	
Topic:	Predict Loss of Inst Air impact on FPCC System	
Num Field 1:	2.6	
Num Field 2:	2.8	
Text Field:	233000 K3.03	
Comments:	<div> <div>Level</div> <div>RO</div> <div>Tier</div> <div>2</div> <div>Group</div> <div>2</div> <div>KA # and Rating</div> <div>233000 K3.03 (2.6/2.8)</div> <div>KA Statement</div> <div>233000 Fuel Pool Cooling/Cleanup Knowledge of the effect that a loss or malfunction of the FUEL POOL COOLING AND CLEAN-UP will have on following: K3.03 Fuel pool water clarity</div> <div>References</div> <div>P&ID M-0053, sheet 4, Rev.17 P&ID M-0054, sheet 2, Rev.7</div> <div>Examinee</div> <div>None</div> <div>References</div> <div></div> <div>Learning</div> <div>LGSOPS0053, no specified objective</div> <div>Objective</div> <div></div> <div>Question source</div> <div>New</div> <div>Question history</div> <div>None</div> <div>Cognitive level</div> <div>Higher</div> <div>10 CFR 55</div> <div>41.7</div> <div>Comments</div> <div>None</div> </div>	

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

49

ID: 1116786

Points: 1.00

Unit 1 is in OPCON 1.

Operators are performing ST-6-001-760-1 (Main Stop Valve and CIV Exercise Test).

As directed by the ST, the PRO:

- Selects the MSV #1 TEST window on the 10C653 DEHC HMI, then
- Presses the START button on that window

Consider the following plant parameters:

1. RPV water level
2. Main Condenser vacuum
3. Main Generator output (MWe)

WHICH ONE of the following identifies **ALL** of the plant parameters (from the above list) that **LOWER** while MSV-1 is stroking in the **CLOSED** direction?

- A. 1
- B. 1 and 2
- C. 2 and 3
- D. 1, 2, and 3

Answer: D

Answer Explanation

Refer to ST-6-001-760-1, the following sections:

- Prerequisite 2.5 requires reactor power to be at or below 92% prior to performing the test
- Step 3.6 reminds us that about a 4% spike (rise) in reactor power is expected when an MSV is stroking closed

A consideration for basic BWR Generic Fundamentals reminds of the following:

- The spike up in reactor power is due to the rise in RPV pressure that results from closing off one of the 4 main steam lines going to the main turbine.
- The RPV pressure rise will collapse some core "voids", causing an **indicated RPV level drop** as some of the water sweeps from the downcomer annulus back into the core.

Not so evident from an understanding of Generic Fundamentals is the impact on Main Generator real power (Megawatts) and Main condenser vacuum. The following plant dynamics occur when the MSV strokes closed:

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- The rise in RPV pressure translates to a corresponding rise in main steam line pressure averaging manifold (PAM) pressure, which causes the EHC Pressure Regulator to throttle open on the Turbine Control Valves (TCVs) in an effort to restore/maintain RPV pressure as required by the EHC "Pressure Set". However, the TCVs can't open enough to maintain PAM pressure, by themselves; thus, the EHC Bypass Control Unit causes the Turbine Bypass Valves (TBVs) to open enough to help the TCVs restore pressure to Pressure Set. Problem is...the now-open TBVs rob some amount of main steam away from the HP turbine; the result is a **drop in Main Generator load (MWe)**.
- Because the TBVs are now dumping some steam into the **main condenser, its vacuum lowers**.

'D' is correct: 1, 2, and 3. Correct for the reasons described above.

'A' is wrong: 1.

'B' is wrong: 1 and 2.

'C' is wrong: 2 and 3.

Distracters are all plausible for the reasons suggested in the comprehensive explanation of the plant/system dynamics, above. At the point of sitting for an NRC Exam, history has shown that ILT RO/SRO Candidates are far removed from their former solid-grounding in the plant behaviors they learned in their GFE Phase of training.

Question 49 Info		
Question Type:	Multiple Choice	
Status:	Active	
Always select on test?	No	
Authorized for practice?	No	
Points:	1.00	
Time to Complete:	4	
Difficulty:	3.50	
System ID:	1116786	
User-Defined ID:	REV 00, 11/17/14	
Cross Reference Number:	NONE	
Topic:	Predict plant parameter changes as a result of stroke-testing an MSV	
Num Field 1:	3.7	
Num Field 2:	3.7	
Text Field:	239001 A1.07	
Comments:	<div> <div>Level</div> <div>Tier</div> <div>Group</div> <div>KA # and Rating</div> <div>KA Statement</div> <div>References</div> <div>Examinee</div> <div>References</div> </div> <div> <div>RO</div> <div>2</div> <div>2</div> <div>239001 A1.07 (3.7/3.7)</div> <div>239001 Main and Reheat Steam Ability to predict and/or monitor changes in parameters associated with operating the MAIN AND REHEAT STEAM SYSTEM controls including: A1.07 Reactor water level</div> <div>ST-6-001-760-1, Rev.42</div> <div>None</div> </div>	

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

	Learning Objective	No specified objective
	Question source	New
	Question history	None
	Cognitive level	Higher
	10 CFR 55	41.5
	Comments	None

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

50

ID: 1102765

Points: 1.00

Both Units are in OPCON 1 when the following occurs:

- All 4 radiation monitor channels sense a valid high radiation condition on the Control Room HVAC intakes
- No Control Room HVAC automatic isolation occurs

CRS directs the PRO to manually initiate a Control Room radiation isolation, per S78.8.A (Manual Initiation of Control Room Radiation or Chlorine/Toxic Chemical Isolation).

WHICH ONE of the following describes the **REQUIRED** steps for the PRO to complete this task?

- A. Perform the following for both Subsystems (A and B):

Place both Control Room Isolation Valve Reset Keylock Switches to RESET, then
Place both Control Room Isolation Valve Trip Switches to RAD, then
Place both Control Room Isolation Valve Reset Keylock Switches to AUTO, then
Depress and release the pushbutton portion of both Trip Switches

- B. Perform the following for just one Subsystem (A or B):

Place both Control Room Isolation Valve Reset Keylock Switches to RESET, then
Place both Control Room Isolation Valve Trip Switches to RAD, then
Place both Control Room Isolation Valve Reset Keylock Switches to AUTO, then
Depress and release the pushbutton portion of both Trip Switches

- C. Perform the following for both Subsystems (A and B):

Place both Control Room Isolation Valve Trip Switches to RAD, then
Place both Control Room Isolation Valve Reset Keylock Switches to RESET, then
Depress and release the pushbutton portion of both Trip Switches

- D. Perform the following for just one Subsystem (A or B):

Place both Control Room Isolation Valve Trip Switches to RAD, then
Place both Control Room Isolation Valve Reset Keylock Switches to RESET, then
Depress and release the pushbutton portion of both Trip Switches

Answer: A

Answer Explanation

Refer to S78.8.A, the following sections:

- NOTE #2 (on page 4) directs operators to manually initiate **BOTH** subsystems (A and B)
- Section 4.2 manually initiates a radiation isolation of the 'A' subsystem, as follows:
 - (Step 4.2.2) - Place both Control Room Isolation Valve Reset Keylock Switches to RESET
 - (Step 4.2.3) - Place both Control Room Isolation Valve Trip Switches to RAD
 - (Step 4.2.4) - Place both Control Room Isolation Valve Reset Keylock Switches to AUTO
 - (Step 4.2.5) - Depress and release the pushbutton portion of both Trip Switches

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

'A' is correct: This answer choice includes the exact sequence of actions described above.

'B' is wrong: This choice includes the exact sequence of actions described above; however, it suggests that only one Subsystem needs to be manually isolated. Plausible, especially, to inexperienced operator/operator candidates who have had minimal training time in the simulator with respect to performing this task. What makes it very distracting is that the examinee does recall that, if the automatic isolation had occurred (as it should have), only one CREFAS Fan will have started (i.e., in the normal Standby lineup for CREFAS, one Fan is in AUTO...meaning that it will auto-start in response to the high radiation signal...while the other Fan is in Standby...meaning that it will start (after a time delay) only if the AUTO Fan fails to start or otherwise produces a low-flow condition).

'C' is wrong: This choice suggests that the operator "Place both Control Room Isolation Valve Trip Switches to RAD" before "Placing both Control Room Isolation Valve Reset Keylock Switches to RESET...". The normal position for the Control Room Isolation Valve Reset Keylock Switches is AUTO. If the operator fails to place those switches in RESET, before rotating the Trip Switch collars to the RAD position, the Subsystem will go into a Chlorine (rather than a Radiation) isolation lineup. This choice is plausible for reasons similar to that for choice 'B' (lack of familiarity with the task). It's also plausible to the examinee who lacks an understanding of the isolation logic, especially as it relates to the function of the Valve Reset Keylock Switches.

'D' is wrong: This choice is identical to choice 'C', except that it suggests that only one Subsystem needs to be isolated. Plausible for the same reasons as for choices 'B' and 'C'.

Question 50 Info		
Question Type:	Multiple Choice	
Status:	Active	
Always select on test?	No	
Authorized for practice?	No	
Points:	1.00	
Time to Complete:	5	
Difficulty:	2.50	
System ID:	1102765	
User-Defined ID:	REV 00, 11/17/14	
Cross Reference Number:	LGSOPS0078.IL7	
Topic:	Recall how to manually initiate a control room radiation isolation	
Num Field 1:	3.2	
Num Field 2:	3.2	
Text Field:	290003 A4.01	
Comments:	<div> <div>Level</div> <div>RO</div> <div>Tier</div> <div>2</div> <div>Group</div> <div>2</div> <div>KA # and Rating</div> <div>290003 A4.01 (3.2/3.2)</div> <div>KA Statement</div> <div>290003 Control Room HVAC</div> <div>Ability to manually operate and/or monitor in the control room: A4.01 Initiate/reset system</div> <div>References</div> <div>S78.8.A, Rev.16</div> <div>Examinee</div> <div>None</div> <div>References</div> <div></div> <div>Learning</div> <div>LGSOPS0078.IL7</div> <div>Objective</div> <div></div> </div>	

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

	Question source	New
	Question history	None
	Cognitive level	Lower
	10 CFR 55	41.7, 41.10
	Comments	None

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

	Tier	1
	Group	1
	KA # and Rating	295028 EK3.01 (3.6/3.9)
	KA Statement	295028 High Drywell Temperature Knowledge of the reasons for the following responses as they apply to HIGH DRYWELL TEMPERATURE: EK3.01 Emergency depressurization
	References	T-102, Rev.24 T-102 Bases, Rev.24
	Examinee References	None
	Learning Objective	LLOT1560.5
	Question source	Bank 560429
	Question history	None
	Cognitive level	Lower
	10 CFR 55	41.5, 41.10
	Comments	None

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

51

ID: 1103345

Points: 1.00

Unit 1 is operating at 100% power when the following occurs:

- A valid 1 UNIT PROTECTION RELAYS ENERGIZED alarm is received (ARC-MCR-125 GEN 1, E1)

No operator action is taken.

WHICH ONE of the following identifies a breaker that indicates **CLOSED** at 10C654?

- A. 20-11 Breaker
- B. FIELD BREAKER
- C. 10-11 Breaker
- D. OUTPUT 635

Answer: C

Answer Explanation

Alarm response card ARC-MCR-125, E1 shows the automatic action designed to occur on a Main Generator lockout, including: Both generator OUTPUT breakers (535 and 635) trip; the Alterrex Exciter FIELD BREAKER trips; the 11 and 12 Unit Aux Buses fast-transfer to their pre-selected Startup Buses (specifically, the 11 Bus transfers to the 10 Startup Bus; i.e., the 10-11 Breaker CLOSES, and the 12 Bus transfers to the 20 Startup Bus; i.e., the 20-12 Breaker CLOSES).

'C' is correct: 10-11 Breaker. Correct for the reasons described above.

'A' is wrong: 20-11 Breaker. Plausible to the examinee who forgets that a "normal electrical alignment" has the 11 Unit Aux Bus pre-selected to Fast Transfer to the 10 Startup Bus, not the 20 Startup Bus.

'B' is wrong: FIELD BREAKER. Plausible to the examinee who forgets that main generator Field Breaker gets a trip signal on a Unit Protection Relay actuation.

'D' is wrong: OUTPUT 635. Plausible to the examinee who doesn't recognize this as one of the two main generator output breakers.

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

Question 51 Info																														
Question Type:	Multiple Choice																													
Status:	Active																													
Always select on test?	No																													
Authorized for practice?	No																													
Points:	1.00																													
Time to Complete:	3																													
Difficulty:	2.00																													
System ID:	1103345																													
User-Defined ID:	REV 00, 11/17/14																													
Cross Reference Number:	LLOT0035.3																													
Topic:	Predict 10C654 electrical distriibution status after Unit Protection Relays actuation																													
Num Field 1:	3.2																													
Num Field 2:	3.3																													
Text Field:	295005 AA2.08																													
Comments:	<table><tr><td>Level</td><td>RO</td></tr><tr><td>Tier</td><td>1</td></tr><tr><td>Group</td><td>1</td></tr><tr><td>KA # and Rating</td><td>295005 AA2.08 (3.2/3.3)</td></tr><tr><td>KA Statement</td><td>295005 Main Turbine Generator Trip Ability to determine and/or interpret the following as they apply to MAIN TURBINE GENERATOR TRIP: AA2.08 Electrical distribution status</td></tr><tr><td>References</td><td>ARC-MCR-125, E1, Rev.0</td></tr><tr><td>Examinee</td><td>None</td></tr><tr><td>References</td><td></td></tr><tr><td>Learning Objective</td><td>LLOT0035.3</td></tr><tr><td>Question source</td><td>New</td></tr><tr><td>Question history</td><td>None</td></tr><tr><td>Cognitive level</td><td>Higher</td></tr><tr><td>10 CFR 55</td><td>41.4</td></tr><tr><td>Comments</td><td>None</td></tr></table>		Level	RO	Tier	1	Group	1	KA # and Rating	295005 AA2.08 (3.2/3.3)	KA Statement	295005 Main Turbine Generator Trip Ability to determine and/or interpret the following as they apply to MAIN TURBINE GENERATOR TRIP: AA2.08 Electrical distribution status	References	ARC-MCR-125, E1, Rev.0	Examinee	None	References		Learning Objective	LLOT0035.3	Question source	New	Question history	None	Cognitive level	Higher	10 CFR 55	41.4	Comments	None
Level	RO																													
Tier	1																													
Group	1																													
KA # and Rating	295005 AA2.08 (3.2/3.3)																													
KA Statement	295005 Main Turbine Generator Trip Ability to determine and/or interpret the following as they apply to MAIN TURBINE GENERATOR TRIP: AA2.08 Electrical distribution status																													
References	ARC-MCR-125, E1, Rev.0																													
Examinee	None																													
References																														
Learning Objective	LLOT0035.3																													
Question source	New																													
Question history	None																													
Cognitive level	Higher																													
10 CFR 55	41.4																													
Comments	None																													

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

52

ID: 1103365

Points: 1.00

Unit 1 is in OPCON 3.

RHR 'A' is in Shutdown Cooling.

WHICH ONE of the following will result in an ON-121 (Loss of Shutdown Cooling) entry?

- A. Loss of 1AY160
- B. Loss of 1BY185
- C. RPV level 27.5"
- D. RPV pressure 64.5 psig

Answer: A

Answer Explanation

Refer to ON-121, Section 2.1 NOTE. A loss of RPS UPS 1AY160 results in an NSSSS automatic isolation of the RHR Suction Isolation Valves (HV-051-1F008 and 009) and the RHR Return Valves (HV-051-1F015(B)).

Refer to GP-8 (Primary and Secondary Containment Isolation Verification and Reset), Attachment 1, page 1 of 3, and Attachment 2, pages 1 and 2, which show that the RHR SDC Isolation Group IIA has two isolation signals ('A' and 'V'): RPV Level 3 (+12.5"), and RPV High Pressure (75 psig).

'A' is correct: Loss of 1AY160. Correct for the reasons described above.

'B' is wrong: Loss of 1BY185. This is one of the two APRM UPS's (1AY185 and 1BY185), neither of which powers any of the NSSSS isolation logic. Plausible to the examinee who recalls that the NSSSS logic is in fact UPS-powered, but who confuses the APRM UPS's with the RPS UPS's.

'C' is wrong: RPV level 27.5". This is RPV Level 4 (the low level alarm, only). Plausible to the examinee who incorrectly recalls/confuses Level 3 with Level 4.

'D' is wrong: RPV pressure 64.5 psig. This is the pressure at which RCIC will automatically isolate. Plausible to the examinee who confuses the 64.5 psig RCIC isolation setpoint with the SDC isolation setpoint of 75 psig.

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

Question 52 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	3
Difficulty:	2.00
System ID:	1103365
User-Defined ID:	REV 00, 11/17/14
Cross Reference Number:	LGSOPS0051.14A
Topic:	Recall RHR SDC Isolations
Num Field 1:	4.0
Num Field 2:	4.2
Text Field:	295021 2.4.11
Comments:	<div> <div>Level</div> <div>RO</div> </div> <div> <div>Tier</div> <div>1</div> </div> <div> <div>Group</div> <div>1</div> </div> <div> <div>KA # and Rating</div> <div>295021 2.4.11 (4.0/4.2)</div> </div> <div> <div>KA Statement</div> <div>295021 Loss of Shutdown Cooling 2.4.11 Knowledge of abnormal condition procedures.</div> </div> <div> <div>References</div> <div>ON-121, Rev.29 GP-8 U/1, Rev.16</div> </div> <div> <div>Examinee</div> <div>None</div> </div> <div> <div>References</div> <div></div> </div> <div> <div>Learning</div> <div>LGSOPS0051.14a</div> </div> <div> <div>Objective</div> <div></div> </div> <div> <div>Question source</div> <div>New</div> </div> <div> <div>Question history</div> <div>None</div> </div> <div> <div>Cognitive level</div> <div>Lower</div> </div> <div> <div>10 CFR 55</div> <div>41.7</div> </div> <div> <div>Comments</div> <div>None</div> </div>

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

53

ID: 1103385

Points: 1.00

Unit 1 plant conditions:

- OPCON 5
- Core Shuffle Part 2 is in progress
- Fuel bundle 43-20 has just been seated in the core
- The main hoist grapple is released and is being raised

Observing the SRMs, the RO determines that an inadvertent criticality has resulted from this fuel bundle movement.

WHICH ONE of the following describes the required action per ON-120 (Fuel Handling Problems)?

- A. Notify Health Physics to determine dose rates
- B. Re-grapple fuel bundle 43-20 and raise it until it clears the top guide
- C. Direct a second licensed operator to verify that the SRMs are not noise-spiking
- D. Evacuate the fuel floor and ensure all insertable control rods are inserted

Answer: D

Answer Explanation

Refer to ON-120, Section 2.1. Because the SRM count rate is continuing to rise, Step 2.1.4 applies.

'D' is correct: Evacuate the fuel floor and ensure all insertable control rods are inserted. Correct for the reason described above.

'A' is wrong: Notify Health Physics to determine dose rates. Plausible to the examinee who does not recognize that the SRM count rate has more than doubled and has not stabilized and is increasing, indicating criticality. Condition exists for an evacuation and HP is notified to assist with evacuation.

'B' is wrong: Re-grapple fuel bundle 43-20 and raise it until it clears the top guide. Plausible to the examinee who does not recognize that the SRM count rate has more than doubled and has not stabilized and is increasing, indicating criticality. If the count rate had stabilized then the correct action would be to raise the bundle until it clears the upper guide, however, after grapple has been released there is no direction to re-grapple.

'C' is wrong: Direct a second licensed operator to verify that the SRMs are not noise-spiking. Plausible to the examinee who only recalls the FH-105 (Core Component Movement), Section 3.8.5.2 concern for distinguishing between...an SRM trend (two doublings) that in fact is indicative of an inadvertent criticality...and noise-induced spiking of the SRMs. Uncertain of him/herself, this examinee chooses to proceed with caution before ordering an evacuation.

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

Question 53 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	4
Difficulty:	2.50
System ID:	1103385
User-Defined ID:	REV 00, 11/17/14
Cross Reference Number:	LLOT0760.10
Topic:	Recall ON-120 actions for signs of inadvertent criticality
Num Field 1:	3.7
Num Field 2:	4.0
Text Field:	295023 AK1.03
Comments:	<div> <div>Level</div> <div>RO</div> <div>Tier</div> <div>1</div> <div>Group</div> <div>1</div> <div>KA # and Rating</div> <div>295023 AK1.03 (3.7/4.0)</div> <div>KA Statement</div> <div>295023 Refueling Accident</div> <div>Knowledge of the operational implications of the following concepts as they apply to REFUELING ACCIDENTS: AK1.03</div> <div>Inadvertent criticality</div> <div>References</div> <div>ON-120, Rev.24</div> <div>Examinee</div> <div>None</div> <div>References</div> <div>Learning</div> <div>LLOT0760.10</div> <div>Objective</div> <div>Question source</div> <div>Bank 1097324</div> <div>Question history</div> <div>LGS 2012 NRC Exam Question #10</div> <div>Cognitive level</div> <div>Lower</div> <div>10 CFR 55</div> <div>41.10, 41.11</div> <div>Comments</div> <div>None</div> </div>

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

54

ID: 1103389

Points: 1.00

Consider the requirements of OP-LG-103-102-100, Human Performance Continuing Good Practices.

WHICH ONE of the following identifies the computer-based system an operator is directed to use to verify the revision of a Surveillance Procedure (ST)?

- A. EDMS
- B. PIMS
- C. HPI
- D. Passport

Answer: B

Answer Explanation

Refer to OP-LGS-103-102-1000, Attachment 11, "Procedure Use" section, 1st bullet..."current revision is to be checked in PIMS (i.e., "Plant Information Management System").

'B' is correct: PIMS. Correct for the reason described above.

'A' is wrong: EDMS. The "Electronic Data Management System" is the central computer-based system from which all procedures (and most other controlled plant documents) are retrieved and printed for use. However, EDMS is not to be used to verify that the revision of the document contained there is the current one.

'C' is wrong: HPI. The "Human Performance Interface" is another gateway/access portal to EDMS, constructed to make easier and faster access to EDMS documents, along with more convenient search methods. Because it is essentially treated the same way as EDMS, it too is not to be used to verify document revisions.

'D' is wrong: Passport. Passport is the central computer database for plant components/equipment, as well as for managing the Corrective Action System. Although it also contains plant controlled document information, in the form of links/cross-references, it is not a reliable source of information for verifying document revisions.

Distracters are all plausible especially to the inexperienced LO Candidate with little hands-on knowledge of procedure usage.

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

Question 54 Info		
Question Type:	Multiple Choice	
Status:	Active	
Always select on test?	No	
Authorized for practice?	No	
Points:	1.00	
Time to Complete:	2	
Difficulty:	2.00	
System ID:	1103389	
User-Defined ID:	REV 00, 11/17/14	
Cross Reference Number:	LGSOPS2005A.7	
Topic:	Recall how to verify a procedure revision	
Num Field 1:	3.5	
Num Field 2:	3.6	
Text Field:	2.1.21	
Comments:	<div> <div>Level</div> <div>RO</div> </div> <div> <div>Tier</div> <div>3</div> </div> <div> <div>Group</div> <div>N/A</div> </div> <div> <div>KA # and Rating</div> <div>2.1.21 (3.5/3.6)</div> </div> <div> <div>KA Statement</div> <div>2.1.21 Ability to verify the controlled procedure copy</div> </div> <div> <div>References</div> <div>OP-LG-103-102-1000, Rev.54</div> </div> <div> <div>Examinee</div> <div>None</div> </div> <div> <div>References</div> <div></div> </div> <div> <div>Learning</div> <div>LGSOPS2005A.7</div> </div> <div> <div>Objective</div> <div></div> </div> <div> <div>Question source</div> <div>New</div> </div> <div> <div>Question history</div> <div>None</div> </div> <div> <div>Cognitive level</div> <div>Lower</div> </div> <div> <div>10 CFR 55</div> <div>41.10</div> </div> <div> <div>Comments</div> <div>None</div> </div>	

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

55

ID: 1103390

Points: 1.00

Consider the following clearance tag attachment methods:

1. DUCT tape attaching a DANGER tag to a valve handwheel in the Cooling Tower manhole
2. String attaching an SCT to a lifted lead inside a MCR panel
3. Adhesive ("Scotch") tape attaching an INFORMATION tag to an annunciator window inside the Radwaste Control Room

WHICH ONE of the following identifies (from the above list) method(s), if any, that **COMPLY WITH** the requirements of OP-MA-109-101 (Clearance and Tagging)?

- A. 1, 2, and 3
- B. 2 and 3, only
- C. 3, only
- D. None

Answer: B

Answer Explanation

Refer to OP-MA-109-101. Answer choices are taken directly from Section 10.2.1...

- 10.2.1. Danger tags or SCT's will be securely fastened to all points of isolation with a nonreusable nylon cable tie with a minimum unlocking strength of 50 pounds for regular size Tags.
 1. When attachment to the point of isolation is not possible, then the tag shall be attached in a highly visible location as close as possible to the equipment to alert all personnel of tagout conditions.
 2. When tag attachment via a nylon cable tie is impractical, then other methods such as tape, string, or other suitable methods of attachment may be used for tag attachment provided the clearance tag will be in a controlled environment.

EXAMPLES OF ALTERNATE TAG ATTACHMENT DEVICES

- String used to attach a clearance tag to a lifted lead inside a control room panel.
- Adhesive tape used to attach a clearance tag to a radwaste control room annunciator window.

'B' is correct: 2 and 3, only. The Cooling Tower manhole is NOT a controlled environment; therefore, the DUCT tape is unacceptable.

'A' is wrong: 1, 2, and 3. Plausible to the examinee who doesn't recognize that Cooling Tower manhole is NOT a controlled environment.

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

'C' is wrong: 3. only. Plausible to the examinee who recognizes that Cooling Tower manhole is NOT a controlled environment, but who also dismisses the "string" method as being acceptable, concluding that a simple string performing such an important function as keeping an electrical lead de-termed is unacceptable, as well.

'D' is wrong: None. Plausible for reasons similar to that for choices 'A' and 'C'; but htis examinee also suspects that the use of "Scotch" tape (not known for its strength) also seems unacceptable.

Question 55 Info		
Question Type:	Multiple Choice	
Status:	Active	
Always select on test?	No	
Authorized for practice?	No	
Points:	1.00	
Time to Complete:	2	
Difficulty:	2.00	
System ID:	1103390	
User-Defined ID:	REV 00, 11/17/14	
Cross Reference Number:	OP-MA-109-101.7	
Topic:	Clearances - Recall requirements for acceptable tag attachment	
Num Field 1:	4.1	
Num Field 2:	4.3	
Text Field:	2.2.13	
Comments:	<div> <div>Level</div> <div>RO</div> </div> <div> <div>Tier</div> <div>3</div> </div> <div> <div>Group</div> <div>N/A</div> </div> <div> <div>KA # and Rating</div> <div>2.2.13 (4.1/4.3)</div> </div> <div> <div>KA Statement</div> <div>2.2.13 Knowledge of tagging and clearance procedures.</div> </div> <div> <div>References</div> <div>OP-MA-109-101, Rev.20</div> </div> <div> <div>Examinee</div> <div>None</div> </div> <div> <div>References</div> <div></div> </div> <div> <div>Learning</div> <div>OP-MA-109-101.7</div> </div> <div> <div>Objective</div> <div></div> </div> <div> <div>Question source</div> <div>Bank 987013</div> </div> <div> <div>Question history</div> <div>None</div> </div> <div> <div>Cognitive level</div> <div>Higher*</div> </div> <div> <div>10 CFR 55</div> <div>41.10</div> </div> <div> <div>Comments</div> <div>*Justification for Higher Cognitive categorization: Examinee must recognize that the stem condition 1st bullet (Cooling Tower manhole) is <u>NOT</u> a controlled environment; therefore, the DUCT tape is unacceptable.</div> </div>	

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

56

ID: 1104787

Points: 1.00

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

- TIP operation is in progress per S74.0.A (Operation of the TIP System)
- The 2E TIP detector is currently inserted in the core

The Reactor Enclosure EO reports that there are workers on the TIP Room roof.

WHICH ONE of the following actions is **immediately** required per S74.0.A?

- A. Direct Security to access the TIP Room roof and evacuate the workers.
- B. Direct the EO to access the TIP Room roof and evacuate the workers.
- C. Withdraw the 2E TIP detector to its in-shield location.
- D. Stop operation of the TIP mechanisms.

Answer: D

Answer Explanation

S74.0.A, Section 4.2 WARNING states: "TIP detectors shall **not** be moved from their chamber shields until Health Physics has taken appropriate actions for TIP system operation." This WARNING is considered to extend to a TIP detector that is in-core, as well. The intent is that so long as the TIP detector is somehow shielded (be it in-shield, or in-core), dose rates are minimized by preventing the movement of highly irradiated TIP detectors through normally accessible areas. Step 4.3 requires the following PA announcement: "Unit 1 (2) TIPS will be (are) in operation. Please stay clear of the TIP room, the TIP room roof, and affected areas."

'D' is correct: Stop operation of the TIP mechanisms. Correct for the reasons described above.

'A' is wrong: Direct Security to access the TIP Room roof and evacuate the workers. No such immediate requirement exists. Plausible to the examinee who fails to recognize that such an action would violate a posted Radiation Boundary and lead to potential uncontrolled dose.

'B' is wrong: Direct the EO to access the TIP Room roof and evacuate the workers. No such immediate requirement exists. Plausible to the examinee who fails to recognize that such an action would violate a posted Radiation Boundary and lead to potential uncontrolled dose.

'C' is wrong: Withdraw the 2E TIP detector to its in-shield location. No such immediate requirement exists. Plausible to the examinee who fails to recognize that such an action would move the irradiated TIP detector through a normally accessible area.

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

Question 56 Info		
Question Type:	Multiple Choice	
Status:	Active	
Always select on test?	No	
Authorized for practice?	No	
Points:	1.00	
Time to Complete:	4	
Difficulty:	3.00	
System ID:	1104787	
User-Defined ID:	REV 00, 11/17/14	
Cross Reference Number:	LLOT1760.2	
Topic:	Determine required action to minimize dose when TIP is in operation	
Num Field 1:	3.4	
Num Field 2:	3.8	
Text Field:	2.3.14	
Comments:	<div> <div>Level</div> <div>Tier</div> <div>Group</div> <div>KA # and Rating</div> <div>KA Statement</div> <div>References</div> <div>Examinee References</div> <div>Learning Objective</div> <div>Question source</div> <div>Question history</div> <div>Cognitive level</div> <div>10 CFR 55</div> <div>Comments</div> </div> <div> <div>RO</div> <div>3*</div> <div>N/A</div> <div>2.3.14 (3.4/3.8)</div> <div>2.3.14 Knowledge of radiation or contamination hazards that may arise during normal, abnormal, or emergency conditions or activities.</div> <div>S74.0.A, Rev.56 RP-AA-460, Rev.26</div> <div>None</div> <div>LLOT1760.2</div> <div>LGS 2012 ILT NRC Exam Question #72 LGS 2012 ILT NRC Exam Question #72</div> <div>Higher**</div> <div>41.12</div> <div>*Justification for Tier 3 item: Although the information regarding this question is found only in the TIP system operating procedure (S74.0.A), this item is nonetheless a legitimate Tier 3 question (i.e., not an "extension of Tier 2, per the requirements of NUREG-1021, Rev.9, Supp 1, section ES-401, page 6 of 33, section 2.a.)</div> <div>**Justification for Higher Cognitive categorization: Because the correct answer to this question is not explicitly stated in the S74.0.A procedure, but instead must be deduced from comprehending the intent of the Step 4.2 WARNING, this item is classified as HIGHER COGNITIVE.</div> </div>	

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

57

ID: 1103428

Points: 1.00

Unit 1 is in a Station Blackout, with the following:

- HPCI and RCIC initiated on RPV low level
- RPV level is recovering
- E-1 (Loss of All AC Power (Station Blackout)) and T-101 are being executed concurrently

WHICH ONE of the following describes the required operator action per E-1?

- A. Shutdown HPCI within 10 minutes of Station Blackout;
Transfer and maintain RCIC Pump suction to the Suppression Pool
- B. Shutdown RCIC within 10 minutes of Station Blackout;
Transfer and maintain HPCI Pump suction to the Suppression Pool
- C. Shutdown HPCI within 10 minutes of Station Blackout;
Maintain RCIC Pump suction aligned to the CST
- D. Shutdown RCIC within 10 minutes of Station Blackout;
Maintain HPCI Pump suction aligned to the CST

Answer: A

Answer Explanation

E-1, step 2.1 directs operators to enter T-100/T-101 (RPV Control), as applicable, and execute it concurrently. Per step 3.1, if HPCI is automatically initiated, then HPCI shutdown per S55.2.A is to be completed within 10 minutes of the Station Blackout. The Limerick design basis for RPV water level control following a Station Blackout credits only the RCIC system for RPV level control since RCIC has sufficient capacity to maintain RPV inventory and HPCI capacity would result in exceeding the High RPV water level trip of +54 inches. Performance of S55.2.A returns the HPCI system to the auto/standby condition if the system has automatically initiated. Step 3.2 of E-1 provides direction to transfer and maintain RCIC suction to the Suppression Pool. The Limerick design basis for RPV level control for the four hour coping period following a Station Blackout credits the RCIC system in operation with suction from the Suppression Pool only. No credit is taken for the CST as a suction source for RCIC.

'A' is correct: Shutdown HPCI within 10 minutes of Station Blackout; Transfer and maintain RCIC Pump suction to the Suppression Pool. Correct for the reasons described above.

'B' is wrong: Shutdown RCIC within 10 minutes of Station Blackout; Transfer and maintain HPCI Pump suction to the Suppression Pool. Plausible to the examinee who cannot recall or is unfamiliar with (1) E-1 requirements for RPV water level control following a Station Blackout when E-1 and T-100/T-101 are being executed concurrently, and/or (2) the Limerick design basis requirements for RPV water level control following a Station Blackout. Also plausible in that HPCI and RCIC share the same suction sources.

'C' is wrong: Shutdown HPCI within 10 minutes of Station Blackout; Maintain RCIC Pump suction aligned to the CST. Plausible to the examinee who is unable to recall or is unfamiliar with (1) E-1 requirements for RPV water level control following a Station Blackout when E-1 and T-100/T-101 are being executed concurrently, and/or (2) the Limerick design basis requirements for RPV water level control following a Station Blackout. Also plausible in that HPCI and RCIC share the same suction sources.

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

'D' is wrong: Shutdown RCIC within 10 minutes of Station Blackout; Maintain HPCI Pump suction aligned to the CST. Plausible to the examinee who is unable to recall or is unfamiliar with (1) E-1 requirements for RPV water level control following a Station Blackout when E-1 and T-100/T-101 are being executed concurrently, and/or (2) the Limerick design basis requirements for RPV water level control following a Station Blackout. Also plausible in that HPCI and RCIC share the same suction sources.

Question 57 Info																												
Question Type:	Multiple Choice																											
Status:	Active																											
Always select on test?	No																											
Authorized for practice?	No																											
Points:	1.00																											
Time to Complete:	3																											
Difficulty:	2.50																											
System ID:	1103428																											
User-Defined ID:	REV 00, 11/17/14																											
Cross Reference Number:	LGSOPS2000																											
Topic:	E-1 Station Blackout - Recall operator actions																											
Num Field 1:	3.8																											
Num Field 2:	4.5																											
Text Field:	2.4.8																											
Comments:	<table><tr><td>Level</td><td>RO</td></tr><tr><td>Tier</td><td>3</td></tr><tr><td>Group</td><td>N/A</td></tr><tr><td>KA # and Rating</td><td>2.4.8 (3.8/4.5)</td></tr><tr><td>KA Statement</td><td>2.4.8 Knowledge of how abnormal operating procedures are used in conjunction with EOPs.</td></tr><tr><td>References</td><td>E-1, Rev.45 E-1 Bases, Rev.9</td></tr><tr><td>Examinee References</td><td>None</td></tr><tr><td>Learning Objective</td><td>LGSOPS2000, no specified objective</td></tr><tr><td>Question source</td><td>Bank 1101097</td></tr><tr><td>Question history</td><td>LGS 2012 NRC Exam Question #73</td></tr><tr><td>Cognitive level</td><td>Lower</td></tr><tr><td>10 CFR 55</td><td>41.10</td></tr><tr><td>Comments</td><td>None</td></tr></table>		Level	RO	Tier	3	Group	N/A	KA # and Rating	2.4.8 (3.8/4.5)	KA Statement	2.4.8 Knowledge of how abnormal operating procedures are used in conjunction with EOPs.	References	E-1, Rev.45 E-1 Bases, Rev.9	Examinee References	None	Learning Objective	LGSOPS2000, no specified objective	Question source	Bank 1101097	Question history	LGS 2012 NRC Exam Question #73	Cognitive level	Lower	10 CFR 55	41.10	Comments	None
Level	RO																											
Tier	3																											
Group	N/A																											
KA # and Rating	2.4.8 (3.8/4.5)																											
KA Statement	2.4.8 Knowledge of how abnormal operating procedures are used in conjunction with EOPs.																											
References	E-1, Rev.45 E-1 Bases, Rev.9																											
Examinee References	None																											
Learning Objective	LGSOPS2000, no specified objective																											
Question source	Bank 1101097																											
Question history	LGS 2012 NRC Exam Question #73																											
Cognitive level	Lower																											
10 CFR 55	41.10																											
Comments	None																											

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

58

ID: 1103429

Points: 1.00

Unit 2 reactor startup is in progress, with the following:

- Reactor power is 4%
- Reactor pressure is 960 psig
- Feedwater to the RPV is through Startup Bypass Valve LV-C-06-238A

The Instrument Air line supplying LV-C-06-238A ruptures at the valve actuator.

WHICH ONE of the following identifies the response of LV-C-06-238A, and an alternate method for maintaining RPV level?

	<u>LV-C-06-238A</u>	<u>Alternate Method</u>
A.	Fails open immediately	HV-06-208A, 'A' RFP Disch Valve
B.	Fails closed immediately	HV-06-220, Pump Bypass Valve
C.	Fails as is for a limited time	HV-06-208A, 'A' RFP Disch Valve
D.	Fails as is for a limited time	HV-06-220, Pump Bypass Valve

Answer: C

Answer Explanation

While LV-C-06-238A is a fail-CLOSED valve (see P&ID M-0006, Sht.6, coordinate F-8), its actuator is the type that traps operating air for a limited time before the air eventually bleeds off (leakage) and the valve fails closed. Only HV-06-208A can pass enough water at 4% power to maintain RPV level; water coming via the Pump Bypass line will be only at condensate pump discharge pressure, which is not high enough to inject with RPV pressure at 960 psig.

'C' is correct: Fails as is for a limited time; HV-06-208A, 'A' RFP Disch Valve. Correct for the reasons described above.

'A' is wrong: Fails open immediately; HV-06-208A, 'A' RFP Disch Valve. Plausible to the examinee who cannot recall the fail-position of LV-C-06-238A.

'B' is wrong: Fails closed immediately; HV-06-220, Pump Bypass Valve. Plausible to examinee who fails to recall that LV-C-06-220 has a piston-type of operator that traps air for a period of time; this examinee also fails to recall where in the system (i.e., upstream of the Reactor Feedwater Pumps) the Pump Bypass Valve is located, and so does not recognize that it cannot pass enough water to maintain RPV level at 4% reactor power.

'D' is wrong: Fails as is for a limited time; HV-06-220, Pump Bypass Valve. Plausible to the examinee who fails to recall where in the system (i.e., upstream of the Reactor Feedwater Pumps) the Pump Bypass Valve is located, and so does not recognize that it cannot pass enough water to maintain RPV level at 4% reactor power.

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

Question 58 Info																																				
Question Type:	Multiple Choice																																			
Status:	Active																																			
Always select on test?	No																																			
Authorized for practice?	No																																			
Points:	1.00																																			
Time to Complete:	4																																			
Difficulty:	3.00																																			
System ID:	1103429																																			
User-Defined ID:	REV 00, 11/17/14																																			
Cross Reference Number:	LLOT0540.14A																																			
Topic:	Predict impact of loss of Instrument Air Loss to LV-C-06-238A																																			
Num Field 1:	3.2																																			
Num Field 2:	3.3																																			
Text Field:	295019 AK2.03																																			
Comments:	<table><tr><td>Level</td><td>RO</td></tr><tr><td>Tier</td><td>1</td></tr><tr><td>Group</td><td>1</td></tr><tr><td>KA # and Rating</td><td>295019 AK2.03 (3.2/3.3)</td></tr><tr><td>KA Statement</td><td>295019 Partial or Total Loss of Instrument Air</td></tr><tr><td></td><td>Knowledge of the interrelations between PARTIAL OR COMPLETE LOSS OF INSTRUMENT AIR and the following:</td></tr><tr><td></td><td>AK2.03 Reactor feedwater</td></tr><tr><td>References</td><td>P&ID M-0006, Sheet 6, Rev.25</td></tr><tr><td>Examinee</td><td>None</td></tr><tr><td>References</td><td></td></tr><tr><td>Learning</td><td>LLOT0540.14A</td></tr><tr><td>Objective</td><td></td></tr><tr><td>Question source</td><td>Bank 562294</td></tr><tr><td>Question history</td><td>None</td></tr><tr><td>Cognitive level</td><td>Higher</td></tr><tr><td>10 CFR 55</td><td>41.7</td></tr><tr><td>Comments</td><td>None</td></tr></table>		Level	RO	Tier	1	Group	1	KA # and Rating	295019 AK2.03 (3.2/3.3)	KA Statement	295019 Partial or Total Loss of Instrument Air		Knowledge of the interrelations between PARTIAL OR COMPLETE LOSS OF INSTRUMENT AIR and the following:		AK2.03 Reactor feedwater	References	P&ID M-0006, Sheet 6, Rev.25	Examinee	None	References		Learning	LLOT0540.14A	Objective		Question source	Bank 562294	Question history	None	Cognitive level	Higher	10 CFR 55	41.7	Comments	None
Level	RO																																			
Tier	1																																			
Group	1																																			
KA # and Rating	295019 AK2.03 (3.2/3.3)																																			
KA Statement	295019 Partial or Total Loss of Instrument Air																																			
	Knowledge of the interrelations between PARTIAL OR COMPLETE LOSS OF INSTRUMENT AIR and the following:																																			
	AK2.03 Reactor feedwater																																			
References	P&ID M-0006, Sheet 6, Rev.25																																			
Examinee	None																																			
References																																				
Learning	LLOT0540.14A																																			
Objective																																				
Question source	Bank 562294																																			
Question history	None																																			
Cognitive level	Higher																																			
10 CFR 55	41.7																																			
Comments	None																																			

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

59

ID: 1103430

Points: 1.00

Unit 1 plant conditions:

- Reactor is SHUTDOWN
- Suppression Pool level is 16.9'
- RCIC is injecting to the RPV with a suction temperature of 106°F
- 1A RHR is in Suppression Pool Cooling with a suction temperature of 115°F
- 1B RHR is secured; its suction temperature is 97°F
- SPOTMOS indicated temperature is 128°F
- CST level is 33.5'

WHICH ONE of the following identifies the **valid** Suppression Pool temperature, per T-102 (Primary Containment Control)?

- A. 97°F
- B. 106°F
- C. 115°F
- D. 128°F

Answer: C

Answer Explanation

Refer to T-102, NOTE #2, which reminds operators that the SPOTMOS probes are located in the suppression pool at an elevation which corresponds to an indicated suppression pool level of 17.8 ft. If indicated suppression pool level drops below 17.8 ft., Residual Heat Removal (RHR) pump suction temperature can be used as a valid alternate method for determining suppression pool temperature provided an RHR pump is running.

'C' is correct: 115°F. Correct for the reasons described above.

'A' is wrong: 97°F. Plausible to the examinee who recognizes that the supp pool level is too low to use SPOTMOS, but who mistakenly believes that the RHR suction temperature to be used is the one for an idle pump, rather than a running one.

'B' is wrong: 106°F. Plausible to the examinee who recognizes that the supp pool level is too low to use SPOTMOS, but who mistakenly believes that the RCIC pump suction temperature is to be used, rather than the running RHR pump suction temperature.

'D' is wrong: 128°F. Plausible to the examinee who either doesn't recognize the low supp pool water level or who simply fails to recall the T-102 Note #2.

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

Question 59 Info																														
Question Type:	Multiple Choice																													
Status:	Active																													
Always select on test?	No																													
Authorized for practice?	No																													
Points:	1.00																													
Time to Complete:	4																													
Difficulty:	2.50																													
System ID:	1103430																													
User-Defined ID:	REV 00, 11/17/14																													
Cross Reference Number:	LLOT1560.5																													
Topic:	T-102 - Identify the Supp Pool temperature with Supp Pool level is 16.9'																													
Num Field 1:	3.9																													
Num Field 2:	3.9																													
Text Field:	295026 EA1.03																													
Comments:	<table><tr><td>Level</td><td>RO</td></tr><tr><td>Tier</td><td>1</td></tr><tr><td>Group</td><td>1</td></tr><tr><td>KA # and Rating</td><td>295026 EA1.03 (3.9/3.9)</td></tr><tr><td>KA Statement</td><td>295026 Suppression Pool High Water Temp Ability to operate and/or monitor the following as they apply to SUPPRESSION POOL HIGH WATER TEMPERATURE: EA1.03 Temperature monitoring</td></tr><tr><td>References</td><td>T-102, Rev.24</td></tr><tr><td>Examinee</td><td>None</td></tr><tr><td>References</td><td></td></tr><tr><td>Learning Objective</td><td>LLOT1560.5</td></tr><tr><td>Question source</td><td>Bank 560663</td></tr><tr><td>Question history</td><td>None</td></tr><tr><td>Cognitive level</td><td>Higher</td></tr><tr><td>10 CFR 55</td><td>41.7, 41.10</td></tr><tr><td>Comments</td><td>None</td></tr></table>		Level	RO	Tier	1	Group	1	KA # and Rating	295026 EA1.03 (3.9/3.9)	KA Statement	295026 Suppression Pool High Water Temp Ability to operate and/or monitor the following as they apply to SUPPRESSION POOL HIGH WATER TEMPERATURE: EA1.03 Temperature monitoring	References	T-102, Rev.24	Examinee	None	References		Learning Objective	LLOT1560.5	Question source	Bank 560663	Question history	None	Cognitive level	Higher	10 CFR 55	41.7, 41.10	Comments	None
Level	RO																													
Tier	1																													
Group	1																													
KA # and Rating	295026 EA1.03 (3.9/3.9)																													
KA Statement	295026 Suppression Pool High Water Temp Ability to operate and/or monitor the following as they apply to SUPPRESSION POOL HIGH WATER TEMPERATURE: EA1.03 Temperature monitoring																													
References	T-102, Rev.24																													
Examinee	None																													
References																														
Learning Objective	LLOT1560.5																													
Question source	Bank 560663																													
Question history	None																													
Cognitive level	Higher																													
10 CFR 55	41.7, 41.10																													
Comments	None																													

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

60

ID: 1103431

Points: 1.00

WHICH ONE of the following rooms/areas have structural components that are designed to relieve pressure from that room/area?

- A. A/C RHR Pump Room
- B. Regen HX Room
- C. RWCU Pump Room
- D. Non-Regen HX Room

Answer: C

Answer Explanation

Generally, there are two types of components that are designed to mitigate an overpressure condition within a room/area: Blowout panels, and Steam Flooding Dampers (SFDs). Blowout panels are mounted only in the following rooms: Outboard MSIV Room, RWCU Pump Room, and HPCI and RCIC Pump Rooms, all of which are in Secondary Containment. Steam Flooding Dampers are located in many areas, all of which are also within Secondary Containment (refer to P&ID M-0076, Sheet 5, Table J, for a complete listing of the SFDs within the Unit 1 Reactor Enclosure).

Although both types of components do in fact "mitigate" an overpressure condition, only the blowout panels actually "relieve" pressure from within the room/area; i.e., the panels are installed as part of the room/area walls using differential-pressure sensitive explosive washers that act to disengage the panel from the wall upon sensing a fairly small d/p within that room/area. For example: the North wall of the the Outboard MSIV Room has a blowout panel that will open when that room's pressure is 0.5 psi higher than Turbine Enclosure pressure, thus "relieving" the Outboard MSIV Room atmosphere to the Turbine Enclosure atmosphere.

Although Steam Flooding Dampers (SFDs) act to mitigate a room's high pressure condition, they do not "relieve" pressure from within that room. Rather, SFDs are installed in the HVAC supply and exhaust ducts for that room. They are normally-open and will automatically close when pressure inside the duct is 5" W.G. higher than pressure outside the duct (i.e., pressure within that room). By closing, the SFD simply prevents any additional pressurization of that room; it does not "relieve" the already overpressure condition within that room.

'C' is correct: RWCU Pump Room. Correct for the reasons described above.

'A' is wrong: A/C RHR Pump Room. Plausible to the examinee who does recall that the RHR Pump Rooms have SFDs (see the Table J cited above), but who fails to comprehend that those SFDs only prevent further room pressurization; that they do not "relieve" the room's overpressure condition.

'B' is wrong: Regen HX Room. Plausible to the examinee who does recall that the Regen HX Room has SFDs (see the Table J cited above), but who fails to comprehend that those SFDs only prevent further room pressurization; that they do not "relieve" the room's overpressure condition.

'D' is wrong: Non-Regen HX Room. Plausible to the examinee who does recall that the Non-Regen HX Room has SFDs (see the Table J cited above), but who fails to comprehend that those SFDs only prevent further area pressurization; that they do not "relieve" the area's overpressure condition.

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

Question 60 Info		
Question Type:	Multiple Choice	
Status:	Active	
Always select on test?	No	
Authorized for practice?	No	
Points:	1.00	
Time to Complete:	3	
Difficulty:	2.50	
System ID:	1103431	
User-Defined ID:	REV 00, 11/17/14	
Cross Reference Number:	LLOT0076B.6F	
Topic:	Recognize room/area containing blowout panels	
Num Field 1:	2.8	
Num Field 2:	3.1	
Text Field:	295035 EK3.01	
Comments:	<p>Level RO</p> <p>Tier 1</p> <p>Group 2</p> <p>KA # and Rating 295035 EK3.01 (2.8/3.1)</p> <p>KA Statement 295035 Secondary Containment High Differential Pressure</p> <p>Knowledge of the reasons for the following responses as they apply to SECONDARY CONTAINMENT HIGH DIFFERENTIAL PRESSURE: EK3.01 Blow-out panel operation: Plant-Specific</p> <p>P&ID M-0076, Sheet 5, Rev.41</p> <p>References</p> <p>Examinee</p> <p>References</p> <p>Learning LLOT0076B.6F</p> <p>Objective</p> <p>Question source New</p> <p>Question history None</p> <p>Cognitive level Higher*</p> <p>10 CFR 55 41.5</p> <p>Comments *Justification for Higher Cognitive categorization: In order to identify the RWCU Pump Room, the examinee must "comprehend" the difference between how SFDs act to mitigate overpressure conditions and how blowout panels do the same, but by "relieving" that overpressure conditions.</p>	

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

61

ID: 1103474

Points: 1.00

Unit 1 LOCA is in progress.

Operators are entering T-112 (Emergency Blowdown) from Step PC/P-11 of T-102.

WHICH ONE of the following describes the specific reason for performing this Emergency Blowdown?

- A. Ensure that primary containment vent valve operability is maintained
- B. Ensure that the primary containment negative design pressure is not exceeded
- C. Ensure that the SRV discharge lines are not damaged
- D. Ensure that the pressure suppression function of the primary containment is maintained

Answer: D

Answer Explanation

Refer to T-102, specifically, the PC/P (Primary Containment Pressure) leg. Only when operators determine that the SAFE side of the Pressure Suppression Pressure (PSP) Curve, PC/P-3, cannot be maintained does Step PC/P-11 direct operators to perform a T-112 Emergency Blowdown. The T-102 Bases for Step PC/P-11 describes the PSP purpose as "to assure the pressure suppression function of primary containment is maintained..."

'D' is correct: Ensure that the pressure suppression function of the primary containment is maintained. Correct for the reasons described above.

'A' is wrong: Ensure that primary containment vent valve operability is maintained. This choice suggests the basis for Step PC/P-13...i.e., to vent the PC when it's determined that pressure cannot be maintained below the Primary Containment Pressure Limit (PCPL) of Curve PC/P-1 (see the T-102 Bases for this step). Plausible to the examinee who mistakenly believes that this is the point in the PC/P leg where an Emergency Blowdown is performed.

'B' is wrong: Ensure that the primary containment negative design pressure is not exceeded. This choice suggests the basis for Step PC/P-8...i.e., to terminate drywell sprays before drywell pressure drops to 0 psig (see the T-102 Bases for this step). Plausible to the examinee who confuses the two steps.

'C' is wrong: Ensure that the SRV discharge lines are not damaged. This choice suggests the basis for Step SP/L-19...i.e., to perform a T-112 Emergency Blowdown when it's determined that the SAFE side of the SRV Tailpipe Level Limit, Curve SP/L-1, cannot be restored and maintained. Plausible to the examinee who forgets that a concern for SRV tailpipe damage is found only in the SP/L leg strategy (see the T-102 basis for Step SP/L-19).

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

Question 61 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	4
Difficulty:	2.50
System ID:	1103474
User-Defined ID:	REV 00, 11/17/14
Cross Reference Number:	LLOT1560.1
Topic:	Recall reason for Emergency Blowdown based on PSP
Num Field 1:	3.7
Num Field 2:	4.1
Text Field:	295024 EK3.04
Comments:	<div> <div>Level</div> <div>RO</div> <div>Tier</div> <div>1</div> <div>Group</div> <div>1</div> <div>KA # and Rating</div> <div>295024 EK3.04 (3.7/4.1)</div> <div>KA Statement</div> <div>295024 High Drywell Presure Knowledge of the reasons for the following responses as they apply to HIGH DRYWELL PRESSURE: EK3.04 †Emergency depressurization</div> <div>References</div> <div>T-102, Rev.24 T-102 Bases, Rev.24</div> <div>Examinee References</div> <div>None</div> <div>Learning Objective</div> <div>LLOT1560.1</div> <div>Question source</div> <div>New</div> <div>Question history</div> <div>None</div> <div>Cognitive level</div> <div>Lower</div> <div>10 CFR 55</div> <div>41.5, 41.10</div> <div>Comments</div> <div>None</div> </div>

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

62

ID: 1103788

Points: 1.00

Plant conditions:

- Reactor scrammed (all rods in)
- Reactor pressure is 600 psig
- Reactor level is -145", down slow
- Suppression Pool level is 17'10"
- HPCI is running and injecting at 5600 gpm
- HPCI suction is aligned to the Suppression Pool
- No other RPV injection sources are available

WHICH ONE of the following describes the further operation of HPCI?

- A. Can continue to inject at 5600 gpm
- B. Can continue to inject but only at a reduced flowrate
- C. Can continue to inject but HPCI suction must be transferred to the CST
- D. HPCI must be secured

Answer: D

Answer Explanation

Per T-102, Step SP/L-4, HPCI must be secured, regardless of adequate core cooling, if Suppression Pool level drops below 18'. Per the T-102 Bases for Step SP/L-4..."Operation of HPCI with its exhaust discharge not submerged will directly pressurize the Suppression Pool. The consequence of not securing HPCI may cause failure of the primary containment from overpressurization. Therefore, HPCI is secured regardless of adequate core cooling if Suppression Pool level drops to below 18'."

'D' is correct: HPCI must be secured. Correct for the reasons described above.

'A' is wrong: Can continue to inject at 5600 gpm. Plausible to the examinee who forgets the T-102 Step and its bases, or who does recall it, except for the fact that the Step disregards the concern for adequate core cooling. This examinee is lulled into thinking this way by the fact that the stem conditions state that "no other RPV injection sources are available."

'B' is wrong: Can continue to inject but only at a reduced flowrate. Plausible for reasons similar to that for choice 'A'. In this case, the examinee attempts to "rationalize" that it would be acceptable to continue operating HPCI at a reduced injection rate because that reduced rate would slow the rate at which the HPCI exhaust would pressurize the Suppression Pool. Again, the fact that "no other RPV injection sources are available" is highly distracting.

'C' is wrong: Can continue to inject but HPCI suction must be transferred to the CST. Plausible to the weaker examinee who completely forgets the concern for over-pressurizing the primary containment with the HPCI exhaust; this examinee instead focuses on whether or not the low pool level can provide adequate NPSH for the HPCI pump and concludes that it cannot, thereby warranting transferring its suction to the CST.

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

Question 62 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	4
Difficulty:	2.50
System ID:	1103788
User-Defined ID:	REV 00, 11/17/14
Cross Reference Number:	LLOT1560.5
Topic:	T-102 - Determine actions required for HPCI with low Supp Pool level
Num Field 1:	4.1
Num Field 2:	4.2
Text Field:	295030 EA2.01
Comments:	<div> <div>Level</div> <div>RO</div> </div> <div> <div>Tier</div> <div>1</div> </div> <div> <div>Group</div> <div>1</div> </div> <div> <div>KA # and Rating</div> <div>295030 EA2.01 (4.1/4.2)</div> </div> <div> <div>KA Statement</div> <div>295030 Low Suppression Pool Water Level Ability to determine and/or interpret the following as they apply to LOW SUPPRESSION POOL WATER LEVEL: EA2.01 Suppression pool level</div> </div> <div> <div>References</div> <div>T-102, Rev.24</div> </div> <div> <div>Examinee</div> <div>None</div> </div> <div> <div>References</div> <div></div> </div> <div> <div>Learning</div> <div>LLOT1560.5</div> </div> <div> <div>Objective</div> <div></div> </div> <div> <div>Question source</div> <div>Bank 560396</div> </div> <div> <div>Question history</div> <div>None</div> </div> <div> <div>Cognitive level</div> <div>Higher</div> </div> <div> <div>10 CFR 55</div> <div>41.10</div> </div> <div> <div>Comments</div> <div>None</div> </div>

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

63

ID: 1103809

Points: 1.00

Unit 1 is operating at 100% power when the following occurs:

- RWCU demin resin spills during a resin transfer on R.E. elevation 283'
- All Reactor Enclosure HVAC Exhaust Rad Monitors indicate 1.2 mR/hr, steady

WHICH ONE of the following identifies the RMDS radiation monitor display that should be used to determine the offsite release rate?

- A. WRAM Total Effluent
- B. North Stack Normal Range
- C. WRAM Low Range
- D. South Stack Normal Range

Answer: D

Answer Explanation

Refer to P&ID M-0026, Sheet 1, to validate the following...

The NORTH STACK receives exhausts from the following:

- Unit 1 (2) Turbine Enclosures
- Radwaste Enclosure
- Unit 1 (2) Battery Rooms
- Unit 1 (2) Steam Packing Condensers
- Standby Gas Treatment System (SGTS)
- Unit 1 (2) Offgas

The SOUTH STACK receives exhausts from the following:

- Unit 1 (2) Reactor Enclosures
- Unit 1 (2) Refueling Floor

Normally, Reactor Enclosure (RE) HVAC is in operation, exhausting through the South Stack. If RE Ventilation Exhaust radiation rises to 1.35 mR/h⁴, RE HVAC isolates and SGTS initiates, then exhausting the Reactor Enclosure atmosphere through SGTS and ultimately through the North Stack. [Refer to alarm response card ARC-MCR-109, E1, to validate the isolation and setpoint.]

Stem condition indicate that the resin spill has caused RE Ventilation Exhaust to reach 1.2 mR/hr, which is below the isolation setpoint. Therefore, only the Radiation Monitor Display System (RMDS) displays associated with the South Stack will show any evidence of an offsite release resulting from the resin spill.

The Wide Range Accident Monitor (WRAM) channels (WRAM Total Effluent and WRAM Low Range) are associated only with the North Stack; the South Stack has no such instruments. Only the South Stack Normal Range channel will provide personnel with information related to the offsite release resulting from the resin spill. [Refer to P&ID M-0026, Sheet 6, to validate these instruments.]

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

'D' is correct: South Stack Normal Range. Correct for the reasons described above.

'A' is wrong: WRAM Total Effluent. Plausible to the examinee who does not recognize that the RE HVAC rad levels of 1.2 mR/hr were NOT high enough to cause the isolation. Thus, that examinee believes the SGTS went into service and is exhausting through the North Stack. Also plausible to an examinee does recognize that ventilation is still exhausting through the South Stack, but incorrectly believe that the South Stack has a WRAM monitor; it does not.

'B' is wrong: North Stack Normal Range. Plausible for reasons similar to that for choice 'A'.

'C' is wrong: WRAM Low Range. Plausible for reasons similar to that for choices 'A' and 'B'.

Question 63 Info																												
Question Type:	Multiple Choice																											
Status:	Active																											
Always select on test?	No																											
Authorized for practice?	No																											
Points:	1.00																											
Time to Complete:	4																											
Difficulty:	2.50																											
System ID:	1103809																											
User-Defined ID:	REV 00, 11/17/14																											
Cross Reference Number:	LGSOPS0026B.4																											
Topic:	Determine RMDS display to use for offsite release																											
Num Field 1:	3.9																											
Num Field 2:	4.2																											
Text Field:	295038 EA1.01																											
Comments:	<table><tr><td>Level</td><td>RO</td></tr><tr><td>Tier</td><td>1</td></tr><tr><td>Group</td><td>1</td></tr><tr><td>KA # and Rating</td><td>295038 EA1.01 (3.9/4.2)</td></tr><tr><td>KA Statement</td><td>295038 High Offsite Release Rate Ability to operate and/or monitor the following as they apply to HIGH OFF-SITE RELEASE RATE: EA1.01 Stack-gas monitoring system</td></tr><tr><td>References</td><td>P&ID M-0026, Sheet 1, Rev.37 P&ID M-0026, Sheet 6, Rev.29 ARC-MCR-109, E1, Rev.2</td></tr><tr><td>Examinee References</td><td>None</td></tr><tr><td>Learning Objective</td><td>LGSOPS0026B.4</td></tr><tr><td>Question source</td><td>New</td></tr><tr><td>Question history</td><td>None</td></tr><tr><td>Cognitive level</td><td>Higher</td></tr><tr><td>10 CFR 55</td><td>41.7</td></tr><tr><td>Comments</td><td>None</td></tr></table>		Level	RO	Tier	1	Group	1	KA # and Rating	295038 EA1.01 (3.9/4.2)	KA Statement	295038 High Offsite Release Rate Ability to operate and/or monitor the following as they apply to HIGH OFF-SITE RELEASE RATE: EA1.01 Stack-gas monitoring system	References	P&ID M-0026, Sheet 1, Rev.37 P&ID M-0026, Sheet 6, Rev.29 ARC-MCR-109, E1, Rev.2	Examinee References	None	Learning Objective	LGSOPS0026B.4	Question source	New	Question history	None	Cognitive level	Higher	10 CFR 55	41.7	Comments	None
Level	RO																											
Tier	1																											
Group	1																											
KA # and Rating	295038 EA1.01 (3.9/4.2)																											
KA Statement	295038 High Offsite Release Rate Ability to operate and/or monitor the following as they apply to HIGH OFF-SITE RELEASE RATE: EA1.01 Stack-gas monitoring system																											
References	P&ID M-0026, Sheet 1, Rev.37 P&ID M-0026, Sheet 6, Rev.29 ARC-MCR-109, E1, Rev.2																											
Examinee References	None																											
Learning Objective	LGSOPS0026B.4																											
Question source	New																											
Question history	None																											
Cognitive level	Higher																											
10 CFR 55	41.7																											
Comments	None																											

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

64

ID: 1103884

Points: 1.00

Unit 1 operators are executing T-103 (Secondary Containment Control) for a primary system discharge into Secondary Containment.

Per T-103, the operators decide to re-align the discharge of the Reactor Enclosure Floor Drain Sump, per T-236, in order to reduce the offsite release rate.

WHICH ONE of the following describes the flowpath for the re-aligned floor drain sump discharge?

- A. To the Suppression Pool via Core Spray suction piping
- B. To the Suppression Pool via RHR Loop 'A' suction piping
- C. To the Suppression Pool via RHR Loop 'B' suction piping
- D. To the Suppression Pool via RCIC suction piping

Answer: A

Answer Explanation

T-103, Step SCC/L-5 permits the re-alignment of the R.E. floor drain sump per T-236. T-236 shuts off the sump discharge to DRW and opens a discharge flowpath to the suppression pool via the Core Spray suction piping.

'A' is correct: To the Suppression Pool via Core Spray suction piping. Correct for the reasons described above.

'B' is wrong: To the Suppression Pool via RHR Loop 'A' suction piping. Plausible for two reasons: (1) T-236 is a seldom, if ever, part of the ILT simulator phase of training; it is therefore likely to be unfamiliar to most ILT Candidates; (2) as such, the suggestion that the flowpath would be via an ECCS system other than Core Spray is quite believable.

'C' is wrong: To the Suppression Pool via RHR Loop 'B' suction piping. Plausible for two reasons: (1) T-236 is a seldom, if ever, part of the ILT simulator phase of training; it is therefore likely to be unfamiliar to most ILT Candidates; (2) as such, the suggestion that the flowpath would be via an ECCS system other than Core Spray is quite believable.

'D' is wrong: To the Suppression Pool via RCIC suction piping. Plausible for two reasons: (1) T-236 is a seldom, if ever, part of the ILT simulator phase of training; it is therefore likely to be unfamiliar to most ILT Candidates; (2) as such, the suggestion that the flowpath would be via an ECCS system other than Core Spray is quite believable.

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

Question 64 Info		
Question Type:	Multiple Choice	
Status:	Active	
Always select on test?	No	
Authorized for practice?	No	
Points:	1.00	
Time to Complete:	3	
Difficulty:	2.00	
System ID:	1103884	
User-Defined ID:	REV 00, 11/17/14	
Cross Reference Number:	LGSOPS2003.IL4	
Topic:	Recall T-236 flowpath for realigning RE Floor Drain Sump discharge	
Num Field 1:	3.1	
Num Field 2:	3.2	
Text Field:	295036 EK2.01	
Comments:	<div> <div>Level</div> <div>Tier</div> <div>Group</div> <div>KA # and Rating</div> <div>KA Statement</div> <div>References</div> <div>Examinee</div> <div>References</div> <div>Learning</div> <div>Objective</div> <div>Question source</div> <div>Question history</div> <div>Cognitive level</div> <div>10 CFR 55</div> <div>Comments</div> <div>RO</div> <div>1</div> <div>2</div> <div>295036 EK2.01 (3.1/3.2)</div> <div>295036 Secondary Containment High Sump/Area Water Level Knowledge of the interrelations between SECONDARY CONTAINMENT HIGH SUMP/AREA WATER LEVEL and the following: EK2.01 Secondary containment equipment and floor drain system</div> <div>T-103, Rev.20</div> <div>T-236 U/1, Rev.14</div> <div>None</div> <div>LGSOPS2003.IL4</div> <div>New</div> <div>None</div> <div>Lower</div> <div>41.10</div> <div>None</div> </div>	

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

65

ID: 1103891

Points: 1.00

Operators are executing T-117, Level/Power Control.

WHICH ONE of the following describes the **EARLIEST** point in T-117 execution when it is permissible to inject to the RPV with HPCI via Core Spray?

- A. First Terminate/Prevent has been performed; the target RPV level band is -100" to -60"
- B. Second Terminate/Prevent has been performed; the target RPV level band is now -150" to -110"
- C. Emergency Blowdown has not been performed; RPV level is -190" and lowering with all other available systems injecting
- D. Emergency Blowdown has been performed; RPV level is -190" and lowering with all other available systems injecting

Answer: D

Answer Explanation

Refer to T-117, Step LQ-25...this is the **EARLIEST** point at which injection inside the core shroud is permitted. This step comes only after T-112 (Emergency Blowdown) has been performed **AND** it's determined that level cannot be restored and maintained above -186".

'D' is correct: Emergency Blowdown has been performed; RPV level is -190" and lowering with all other available systems injecting. Correct for the reason described above.

'A' is wrong: First Terminate/Prevent has been performed; the target RPV level band is -100" to -60".

'B' is wrong: Second Terminate/Prevent has been performed; the target RPV level band is now -150" to -110".

'C' is wrong: Emergency Blowdown has not been performed; RPV level is -190" and lowering with all other available systems injecting.

Distracters are all plausible because they cite the several other times during the execution of T-117, specifically Steps LQ-16, 17, and 22, when RPV re-injection is directed.

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

Question 65 Info		
Question Type:	Multiple Choice	
Status:	Active	
Always select on test?	No	
Authorized for practice?	No	
Points:	1.00	
Time to Complete:	3	
Difficulty:	2.00	
System ID:	1103891	
User-Defined ID:	REV 00, 11/17/14	
Cross Reference Number:	LLOT1560.5	
Topic:	T-117 - Recall EARLIEST point at which injection inside the core shroud is permitted	
Num Field 1:	3.7	
Num Field 2:	4.7	
Text Field:	206000 2.4.6	
Comments:	<div> <div>Level</div> <div>RO</div> <div>Tier</div> <div>2</div> <div>Group</div> <div>1</div> <div>KA # and Rating</div> <div>206000 2.4.6 (3.7/4.7)</div> <div>KA Statement</div> <div>206000 HPCI</div> <div></div> <div>2.4.6 Knowledge of EOP mitigation strategies.</div> <div>References</div> <div>T-117, Rev.17</div> <div>Examinee</div> <div>None</div> <div>References</div> <div></div> <div>Learning</div> <div>LLOT1560.5</div> <div>Objective</div> <div></div> <div>Question source</div> <div>Bank 989228</div> <div>Question history</div> <div>None</div> <div>Cognitive level</div> <div>Lower</div> <div>10 CFR 55</div> <div>41.10</div> <div>Comments</div> <div>None</div> </div>	

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

66

ID: 1103894

Points: 1.00

Unit 1 plant startup is in progress after a forced outage, with the following:

- The date is August 15

The PRO has been directed to perform the following at 10C655:

- Place the "preferred" two Service Water (SW) Pumps in service per S10.1.A (SW System Startup and Normal Operation)

1B SW Pump is now operating.

WHICH ONE of the following identifies:

- (1) the next SW Pump to be started, and
- (2) the parameter available to the PRO (at 10C655) to confirm that pump flows are in the acceptable range?

- A. (1) 1C or 1A
(2) motor current
- B. (1) 1C only
(2) motor current
- C. (1) 1C only
(2) pump d/p
- D. (1) 1C or 1A
(2) pump d/p

Answer: B

Answer Explanation

Refer to S10.6.A (Swapping SW Pumps), Section 3.5 and its NOTE for information concerning the preferred (most desired) SW Pump configuration for summer (3.5.1) and winter (3.5.2). Stem indicates the date is August 15; therefore, the examinee is expected to recognize that, with the 1B pump operating, the "next" pump to be started can only be 1C. If this were a winter evolution, then either the 1A or the 1C pump could be started next.

Refer to S10.7.C (SW Flow Adjustments), Section 3.0 NOTE, which explains how either pump d/p (psid), actual flow (gpm), or motor current (amps) may be used to confirm that pump flows are within their acceptable range. However, at LGS, only pump amps (motor current) is available in the MCR (at *0C655); the S10.7.C (and similar S10 procedures) provide specific ranges of motor current (amps) that represent acceptable pump flows, for both single-pump and two-pump operation.

'B' is correct: (1) 1C only; (2) motor current. Correct for the reasons described above.

'A' is wrong: (1) 1C or 1A; (2) motor current. Part (1) is plausible to the examinee who doesn't recall the summer/winter configurations.

'C' is wrong: (1) 1C only; (2) pump d/p. Part (2) is plausible to the examinee who doesn't recall the SW indication available in the MCR.

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

'D' is wrong: (1) 1C or 1A; (2) pump d/p. Plausible for the same reasons as that for choices 'A' and 'C'.

Question 66 Info		
Question Type:	Multiple Choice	
Status:	Active	
Always select on test?	No	
Authorized for practice?	No	
Points:	1.00	
Time to Complete:	4	
Difficulty:	2.50	
System ID:	1103894	
User-Defined ID:	REV 00, 11/17/14	
Cross Reference Number:	LGSOPS0010.6	
Topic:	Recognize Preferred Service Water Lineup for Summer and Predict Motor Currents	
Num Field 1:	2.8	
Num Field 2:	2.8	
Text Field:	400000 A1.01	
Comments:	<div> <div>Level</div> <div>RO</div> <div>Tier</div> <div>2</div> <div>Group</div> <div>1</div> <div>KA # and Rating</div> <div>400000 A1.01 (2.8/2.8)</div> <div>KA Statement</div> <div>400000 Component Cooling Water Ability to predict and / or monitor changes in parameters associated with operating the CCWS controls including: A1.01 CCW flow rate</div> <div>References</div> <div>S10.6.A, Rev.21 S10.7.C, Rev.27</div> <div>Examinee</div> <div>None</div> <div>References</div> <div></div> <div>Learning</div> <div>LGSOPS0010.6</div> <div>Objective</div> <div></div> <div>Question source</div> <div>New</div> <div>Question history</div> <div>None</div> <div>Cognitive level</div> <div>Higher</div> <div>10 CFR 55</div> <div>41.5, 41.10</div> <div>Comments</div> <div>None</div> </div>	

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

67

ID: 1103944

Points: 1.00

Unit 1 is operating at 100% power when the following occurs:

- All power is lost from 1BY185 (all its loads de-energize)

Operators stabilize the plant.

Then:

- Due to toxic gas, operators perform the Immediate Actions of SE-1 (Remote Shutdown) and evacuate the MCR

Consider the following indications for determining that all control rods have fully inserted:

1. "FULL-IN" lights are lit on the FCD
2. "ALL RODS IN" status is shown on PMS
3. "Rods not full-in" LED is extinguished at the RDCS cabinet in the AER

WHICH ONE of the following identifies (from the above list) the indications, if any, that operators can use to confirm that all rods have fully inserted?

(Assume all light bulbs / LEDs are good.)

- A. 1, 2, and 3
- B. 2, only
- C. 3, only
- D. None

Answer: D

Answer Explanation

Refer to 1S73.1.B (COL), Electrical Panel Alignment for Reactor Manual Control System, page 3, Step 6, which shows that the 1BY185 (static inverter) powers the "RPIS 10C615" panel. This panel powers the circuits for all of the RPIS Position-Indicating-Probe (PIP) reed switches. Loss of 1BY185 results in completely disabling the PIP for all 185 control rods; i.e., RPIS is incapable of providing any control rod position indication that is reliant on functioning PIPs.

All three of the indications suggested in the stem conditions (i.e., the "Full-In" lights on the MCR Full Core Display, the "All Rods In" status message on the Plant Process Computer screen (PMS), and the "Rods Not Full In" LED on the Rod Drive Control System (RDCS) cabinet in the aux Equipment Room (AER) rely on functioning PIPs. Therefore, none of the three suggested indications can be used by the operators.

'D' is correct: None. Correct for reasons described above.

'A' is wrong: 1, 2, and 3. Plausible to the examinee who does recall that one of the APRM static inverters (1AY185 or 1BY185) powers the RPIS panel, but who mistakenly chooses the wrong inverter (1AY185). Thus, the conclusion that 1AY185 is still powered leads the examinee to conclude that RPIS is unaffected.

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

'B' is wrong: 2, only. Plausible to the examinee who recognizes that the 1BY185 loss has affected RPIS, but who mistakenly believes that the plant process computer (PMS) does not rely on RPIS inputs; therefore, the "All Rods In" status message is still available to the operators.

'C' is wrong: 3, only. Plausible to the examinee who recognizes that the 1BY185 loss has affected RPIS, and therefore, has disabled both the FCD and the PMS indications. However, that examinee mistakenly believes that the RDCS (being the "heart" of RMCS) is somehow not reliant on the PIPs.

Question 67 Info		
Question Type:	Multiple Choice	
Status:	Active	
Always select on test?	No	
Authorized for practice?	No	
Points:	1.00	
Time to Complete:	4	
Difficulty:	3.00	
System ID:	1103944	
User-Defined ID:	REV 00, 11/17/14	
Cross Reference Number:	LGSOPS0073A.4	
Topic:	Predict impact of 1BY185 loss on RPIS	
Num Field 1:	2.7	
Num Field 2:	2.8	
Text Field:	214000 K5.01	
Comments:	<div> <div>Level</div> <div>Tier</div> <div>Group</div> <div>KA # and Rating</div> <div>KA Statement</div> <div>References</div> <div>Examinee</div> <div>References</div> <div>Learning</div> <div>Objective</div> <div>Question source</div> <div>Question history</div> <div>Cognitive level</div> <div>10 CFR 55</div> <div>Comments</div> <div>RO</div> <div>2</div> <div>2</div> <div>214000 K5.01 (2.7/2.8)</div> <div>214000 RPIS</div> <div>Knowledge of the operational implications of the following concepts as they apply to ROD POSITION INFORMATION SYSTEM: K5.01 Reed switches</div> <div>1S73.1.B (COL), Rev.6</div> <div>None</div> <div>LGSOPS0073A.4</div> <div>New</div> <div>None</div> <div>Higher</div> <div>41.7</div> <div>None</div> </div>	

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

68

ID: 1103946

Points: 1.00

Operators have evacuated the MCR due to toxic gas.

Per SE-1, all Remote Shutdown Transfer Switches (at the RSP) have been placed in EMERGENCY.

WHICH ONE of the following describes a manipulation that Unit 1 operators will have to perform in order to place '1A' RHR in Suppression Pool Cooling?

- A. Throttle open the '1A' RHR Pump Full Flow Test Return (HV-51-1F024A) locally at the valve
- B. Close the '1A' RHR HX Bypass (HV-51-1F048A) locally at the valve
- C. Open the '1A' RHR HX Inlet (HV-51-1F047A) at the RSP
- D. After starting the '1A' RHR Pump, open the '1A' RHR Pump Min Flow Valve (HV-51-1F007A) at the RSP

Answer: D

Answer Explanation

Refer to SE-1 (Remote Shutdown), Section 4.7 and Attachment 1.

Although the RHR HX Inlet (F047) does have a control switch at the RSP (Remote Shutdown Panel); the valve is normally-OPEN, therefore, no manipulation is required.

Although the RHR HX Bypass (F048) does have to be closed, it has a control switch at the RSP; therefore, there is no need to manually stroke it closed locally at the valve.

The Full Flow Test Return (F024) has a control switch at the RSP; therefore, there is no need to manually throttle it for the desired flow locally at the valve.

With all RST Switches having been placed in EMERGENCY, the auto-cycle feature for the RHR Pump Min Flow Valve (F007) is disabled; therefore, the operator is directed to immediately open the valve (control switch at the RSP) after starting the pump.

'D' is correct: After starting the '1A' RHR Pump, open the '1A' RHR Pump Min Flow Valve (HV-51-1F007A) at the RSP. Correct for the reasons described above.

'A' is wrong: Throttle open the '1A' RHR Pump Full Flow Test Return (HV-51-1F024A) locally at the valve. Plausible to the examinee who fails to recall that the F024 valve can be controlled at the RSP.

'B' is wrong: Close the '1A' RHR HX Bypass (HV-51-1F048A) locally at the valve. Plausible to the examinee who fails to recall that the F048 valve can be controlled at the RSP.

'C' is wrong: Open the '1A' RHR HX Inlet (HV-51-1F047A) at the RSP. Very plausible to the examinee who recognizes that the RTS Switches in EMERGENCY have disabled the auto capability of various valves, but who fails to recall that the F047 valve is, first of all, already normally-open, and that it has no automatic functionality.

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

Question 68 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	4
Difficulty:	2.50
System ID:	1103946
User-Defined ID:	REV 00, 11/17/14
Cross Reference Number:	LLOT0051.12
Topic:	Recall how to operate RHR in SP Cooling when in SE-1
Num Field 1:	3.0
Num Field 2:	3.2
Text Field:	219000 K4.05
Comments:	<div> <div>Level</div> <div>RO</div> </div> <div> <div>Tier</div> <div>2</div> </div> <div> <div>Group</div> <div>2</div> </div> <div> <div>KA # and Rating</div> <div>219000 K4.05 (3.0/3.2)</div> </div> <div> <div>KA Statement</div> <div>219000 RHR/LPCI: Torus/Pool Cooling Knowledge of RHR/LPCI: TORUS/SUPPRESSION POOL COOLING MODE design feature(s) and/or interlocks which provide for the following: K4.05 Pump minimum flow protection</div> </div> <div> <div>References</div> <div>SE-1, Rev.70</div> </div> <div> <div>Examinee</div> <div>None</div> </div> <div> <div>References</div> <div></div> </div> <div> <div>Learning</div> <div>LLOT0051.12</div> </div> <div> <div>Objective</div> <div></div> </div> <div> <div>Question source</div> <div>Bank 989411</div> </div> <div> <div>Question history</div> <div>None</div> </div> <div> <div>Cognitive level</div> <div>Higher</div> </div> <div> <div>10 CFR 55</div> <div>41.7, 41.10</div> </div> <div> <div>Comments</div> <div>None</div> </div>

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

69

ID: 1103947

Points: 1.00

Unit 1 is operating at 100% power when the following occurs:

- Steam Flow transmitters FT-041-1N003B and FT-041-1N003D fail simultaneously

Shortly thereafter, a lowering main condenser vacuum forces operators to successfully insert a manual scram using RPS.

WHICH ONE of the following identifies:

- (1) the mode of level control (Single-element/Three-element) after the steam flow transmitters fail, and
 - (2) the response of the RFPTs after the RPS actuation?
- A. (1) Single-element
(2) Speeds immediately begin to ramp down to minimum speed
 - B. (1) Three-element
(2) Speeds remain as is for 10 seconds then begin to ramp down to establish 10% Total FW flow
 - C. (1) Three-element
(2) Speeds immediately begin to ramp down to minimum speed
 - D. (1) Single-element
(2) Speeds remain as is for 10 seconds then begin to ramp down to establish 10% Total FW flow

Answer: D

Answer Explanation

Refer to S06.1.H U/1, Attachment 1 Alarm List, specifically: Signal Identity 1XX-FW301.ISFE, found at the top of Attachment 1, page 10. There, we find that the simultaneous failure of FT-041-1N003B and FT-041-1N003D identifies a "Steam Flow SMS Error." The 'Automatic Actions' column reveals that FWLCS will auto-swap to Single-Element control; however, the 'Operator Actions' column does not indicate that the forced single-element control will prevent the Scram Profile from being activated. In fact, FWLCS will swap to Three-Element control and activate the Scram Profile when an RPS scram is initiated (this has been validated to be correct on the LGS Simulator). This "successful" activation of the Scram Profile, with a pre-existing dual-steam flow transmitter failure would be very different were the pre-existing failure a dual-feed flow transmitter failure for a single RFPT. In that case, the Scram Profile will NOT activate in response to the RPS scram actuation; as such, the RFPT speeds would immediately begin to ramp down toward their minimum speed (~2300 rpm)...refer to Signal Identity 1XX-FW302.ITFFE, on page 15 of the Attachment 1 Alarm List, to validate this claim.

Refer to S06.1.D U/1 (Post Scram Level Control), Attachment 1, page 1 of 4, especially Figure 1, for a description of how the RFPTs respond when the Scram Profile is activated...namely, that the RFPT speeds lock in place (remain as is) for 10 seconds, after which they begin to ramp down so as to produce a controlled lowering of the total feedwater flow (at a rate 6% flow per second) until 10% TFW is established.

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

'D' is correct: (1) Single-element; (2) Speeds remain as is for 10 seconds then begin to ramp down to establish 10% Total FW flow. Correct for the reasons described above.

'A' is wrong: (1) Single-element; (2) Speeds immediately begin to ramp down to minimum speed. Part (2) is plausible to the examinee who confuses the impact of a dual-steam flow transmitter with that of a dual-feed flow transmitter failure (as described above).

'B' is wrong: (1) Three-element; (2) Speeds remain as is for 10 seconds then begin to ramp down to establish 10% Total FW flow. Part (1) is plausible to the examinee who recognizes that the Scram Profile does activate, but also recalls that FWLC must be in Three-element control in order for that to occur. As such, that examinee fails to carefully read the Part (1) of the question statement (which asks for the FWLC status after the dual-transmitter failure); the examinee inappropriately applies Part (1) to what he/she knows to be the FWLC status (Three-element) after the RPS actuation, instead.

'C' is wrong: (1) Three-element; (2) Speeds immediately begin to ramp down to minimum speed. Plausible for reasons similar to that for choices 'A' and 'B'.

Question 69 Info		
Question Type:	Multiple Choice	
Status:	Active	
Always select on test?	No	
Authorized for practice?	No	
Points:	1.00	
Time to Complete:	4	
Difficulty:	2.50	
System ID:	1103947	
User-Defined ID:	REV 00, 11/17/14	
Cross Reference Number:	LLOT0550,11	
Topic:	FWLCS Steam Flow Transmitter Failure - Predict RFPT response to RPS scram	
Num Field 1:	3.8	
Num Field 2:	3.8	
Text Field:	259001 K6.07	
Comments:	<div> <div>Level</div> <div>Tier</div> <div>Group</div> <div>KA # and Rating</div> <div>KA Statement</div> <div>References</div> <div>Examinee References</div> <div>Learning Objective</div> </div> <div> <div>RO</div> <div>2</div> <div>2</div> <div>259001 K6.07 (3.8/3.8)</div> <div>259001 Reactor Feedwater Knowledge of the effect that a loss or malfunction of the following will have on the REACTOR FEEDWATER SYSTEM: K6.07 Reactor water level control system</div> <div>S06.1.H U/1, Rev.14 S06.1.D U/1, Rev.23</div> <div>None</div> <div>LLOT0550,11</div> </div>	

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

	Question source	Modified Bank 946742 - Revised Part (2) of question statement and of each answer choice. Was originally phased as "Scram Profile Activiated, or Not"; is now phrased as "RFPT response after the RPS actuation". Modified in this way in order to more closely match the selected KA statement.
	Question history	None
	Cognitive level	Higher
	10 CFR 55	41.7
	Comments	None

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

70

ID: 1103964

Points: 1.00

Unit 1 is operating at 9% power during a GP-2, PLANT STARTUP, with the following:

- The RWM is currently latched to Group 7
- Group 7 INSERT limit is 8, and WITHDRAW limit is 24

A CRD flow controller fault results in the following:

- Control rod 10-27 is inadvertently withdrawn to position 30
- Reactor power rises to 12%

WHICH ONE of the following identifies the required operator action, per ON-123 (Mispositioned Control Rods)?

- A. Leave the RWM as is, restore control rod 10-27 to position 24, then contact the R.E.
- B. First, bypass the RWM, then insert control rod 10-27 to position 24 and contact the R.E.
- C. Demand a P-1 edit, then contact the R.E.
- D. First, bypass the RWM, then insert control rod 10-27 to position 00 and contact the R.E.

Answer: B

Answer Explanation

Upon entry into ON-123, examinee will review Steps 2.1 and 2.2, then proceed to Step 2.4, where he/she should recognize, from the stem conditions, that control rod 10-27 is withdrawn beyond the "one notch" provision of Step 2.4. As such, the examinee proceeds to Step 2.6 which provides direction for the rod being withdrawn "greater than one notch past its intended location" (i.e., > 1 notch past the Withdraw Limit of Position 24). At Step 2.6, the examinee must now recognize that the resulting 12% reactor power is in fact still below the LPSP (Low Power Setpoint). At LGS, the LPSP is 15.9% power based on Total Steam Flow. Below the LPSP, the Rod Worth Minimizer (RWM) enforces its rod blocks. The examinee is expected to recognize that the control rod 10-27 being greater than two notches past its Withdraw Limit (two notches would be Position 28; the rod is actually at Position 30), causes the RWM to generate both an INSERT and WITHDRAW rod block (of all control rods). Therefore, operators must manually bypass the RWM (done at the RWM itself) before they will be able to move control rod 10-27. Note - Although Step 2.6 does not explicitly say "Bypass the RWM", the examinee is expected to recognize that, with the rod mispositioned by >2 notches, the RWM will have to first be bypassed, before any movement of the rod is possible.

'B' is correct: First, bypass the RWM, then insert control rod 10-27 to position 24 and contact the R.E. Correct for the reasons described above. This is taken from Step 2.6, 1st bullet.

'A' is wrong: Leave the RWM as is, restore control rod 10-27 to position 24, then contact the R.E. Plausible to the examinee who fails to recognize that the INSERT and WITHDRAW rod blocks are present. In fact, if control rod 10-27 had landed at Position 28 rather than Position 30, the RWM would not have to be bypassed; this answer choice would be correct. This is also taken from Step 2.6, 1st bullet, but, as discussed earlier, ignores the need to manually bypass the RWM.

'C' is wrong: Demand a P-1 edit, then contact the R.E. This is taken from Step 2.6, 3rd bullet, which would apply if power were above the LPSP; plausible for the reasons already described above.

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

'D' is wrong: First, bypass the RWM, then insert control rod 10-27 to position 00 and contact the R.E. This is taken from Step 2.5, 1st bullet, which would apply if this event had occurred during a plant shutdown (i.e., while rods are being inserted). Plausible to the examinee who does recognize that power is below the LPSP, but who fails to recognize that Step 2.5 doesn't apply for this situation.

Question 70 Info		
Question Type:	Multiple Choice	
Status:	Active	
Always select on test?	No	
Authorized for practice?	No	
Points:	1.00	
Time to Complete:	5	
Difficulty:	2.00	
System ID:	1103964	
User-Defined ID:	REV 00, 11/17/14	
Cross Reference Number:	LGSOPS1550.3	
Topic:	Predict RWM response to mispositioned rod and determine ON-123 action to mitigate	
Num Field 1:	3.1	
Num Field 2:	3.5	
Text Field:	201006 A2.05	
Comments:	<div> <div>Level</div> <div>Tier</div> <div>Group</div> <div>KA # and Rating</div> <div>KA Statement</div> <div>References</div> <div>Examinee</div> <div>References</div> <div>Learning</div> <div>Objective</div> <div>Question source</div> <div>Question history</div> <div>Cognitive level</div> <div>10 CFR 55</div> <div>Comments</div> </div> <div> <div>RO</div> <div>2</div> <div>2</div> <div>201006 A2.05 (3.1/3.5)</div> <div>201006 RWM</div> <div>Ability to (a) predict the impacts of the following on the ROD WORTH MINIMIZER SYSTEM (RWH) (PLANT SPECIFIC); and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: A2.05 Out of sequence rod movement</div> <div>ON-123, Rev.21</div> <div>ON-123 (entire proecedure)</div> <div>LGSOPS1550.3</div> <div>Bank 976942</div> <div>None</div> <div>Higher</div> <div>41.5, 41.10</div> <div>None</div> </div>	

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

71

ID: 1103966

Points: 1.00

Unit 2 is operating at 100% power when operators insert a manual scram due to rapidly rising Drywell pressure.

An ATWS occurs:

- RPV level reaches -130" before RCIC stabilizes it there
- RPV pressure is 700 psig, steady

CRS directs operators to Terminate and Prevent RPV Injection using T-270.

WHICH ONE of the following describes the **REQUIRED** controls manipulation(s) (at 20C601) necessary to terminate/prevent either Core Spray or LPCI?

- A. Place all 4 Core Spray Pump handswitches to STOP.
Place the handswitches to CLOSE and release for HV-52-2F005 and HV-52-2F037.
- B. Place the handswitches to CLOSE (and release) for HV-52-2F005 and HV-52-2F037.
No additional manipulations are required for Core Spray.
- C. Place all 4 RHR Pump handswitches to STOP.
No additional manipulations are required for RHR.
- D. Place all 4 RHR Pump handswitches to STOP.
Place all 4 LPCI Injection Valve handswitches to CLOSE and release.

Answer: C

Answer Explanation

Refer to T-270, Section 4.7, which provides the direction for preventing the LOCA automatic start of the Core Spray and RHR Pumps, by positioning to "TEST" the S11 and S44 "Pump 4KV Bus Power Monitor" Switches. Refer to Core Spray Elementary Drawing E21-1040-E-005, Sheet 001...the S11A switch (for example) is shown at coordinate F-7; when the switch is placed in TEST, it de-energizes relay K10A, disabling the control circuit for the 'A' Core Spray Pump...coordinate D-7 shows a now-open contact T1-M1 for K10A, which de-energizes relays K25A and K26A...coordinates C/D-4/5 show now-open contacts for K25A and K26A that disable the control circuit for the Core Spray Loop A Shutoff Valve 2F005. all of this simply shows that performing T-270 Section 4.7 results in overriding the ECCS pumps "OFF" and their associated injection/shutoff valves "CLOSED". Refer to RHR Elementary Drawing E11-1040-E-005, Sheet 001 to validate the same design for the RHR Pumps and LPCI Injection Valves (2F017's).

Given the sequence of events described in the question stem conditions, the examinee is expected to recognize that the LOCA signal occurred before the CRS called for performance of T-270.

Refer to T-270, Section 4.4, Core Spray Terminate/Prevent:

- CAUTION 2 of Step 4.4.1 reminds operators that if Section 4.7 wasn't performed before the LOCA signal (it wasn't) AND the Core Spray valves (2F005 and 2F037) have OPENED (they have not), then the operators must CLOSE those valves using their handswitches at 20C601.
- However, the examinee is expected to recognize that although the Core Spray pumps are running (LOCA signal), the 2F005 and 2F037 valves are still CLOSED; the reason is that the valve control logic "opening permissive" requires RPV pressure to be less than 455 psig (stem conditions indicate RPV pressure is steady at 700 psig).

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

Refer to T-270, Section 4.5, RHR Terminate/Prevent:

- CAUTION 2 of Step 4.51 is essentially the same as that for Core Spray Section 4.4.
- Similar to Core Spray, the RHR pumps are also running, but their associated LPCI injection valves (2F017A, B, C, D) are still CLOSED; again, their "opening permissive" (<74 psid between RHR discharge pressure and RPV pressure) is not satisfied with a 700 psig RPV pressure.

Therefore, the **REQUIRED** controls manipulation(s) to terminate/prevent either of these two ECCS systems is simply to...STOP the running pumps. T-270, Step 4.1.1 will, in every case, dispatch an operator to the AER to perform Section 4.7. Until RPV pressure drops enough to satisfy the opening permissive for the injection/shutoff valves, they'll remain CLOSED. and once Section 4.7 is completed, they will remain overridden CLOSED regardless of RPV pressure.

'C' is correct: Place all 4 RHR Pump handswitches to STOP; No additional manipulations are required for RHR. Correct for the reasons described above.

'A' is wrong: Place all 4 Core Spray Pump handswitches to STOP; Place the handswitches to CLOSE and release for HV-52-2F005 and HV-52-2F037. Plausible to the examinee who fails to recognize that the 2F005 and 2F037 are still CLOSED (with RPV pressure steady at 700 psig). Also plausible to the examinee who does recognize that the 2F005 and 2F037 are still CLOSED, but mistakenly believes that the impending performance of Section 4.7 will only "override OFF" the pumps and not also the injection/shutoff valves. This is a common mistake because inexperienced operators/Candidates only recall the names of the S11 and S44 TEST switches as being "Pump 4KV Bus Power Monitor" switches.

'B' is wrong: Place the handswitches to CLOSE (and release) for HV-52-2F005 and HV-52-2F037; No additional manipulations are required for Core Spray. Plausible for reasons similar to that for choice 'A'. This examinee also fails to recognize that the pumps have in fact auto-started and so must be STOPPED using the handswitches.

'D' is wrong: Place all 4 RHR Pump handswitches to STOP; Place all 4 LPCI Injection Valve handswitches to CLOSE and release. Plausible for reasons similar to that for choice 'A'; except, in this case the incorrect thinking applies to RHR.

Question 71 Info		
Question Type:	Multiple Choice	
Status:	Active	
Always select on test?	No	
Authorized for practice?	No	
Points:	1.00	
Time to Complete:	5	
Difficulty:	2.50	
System ID:	1103966	
User-Defined ID:	REV 00, 11/17/14	
Cross Reference Number:	NONE	
Topic:	Given an ATWS/LOCA, recognize the T-270 manips required to terminate/prevent Core Spray and RHR	
Num Field 1:	4.6	
Num Field 2:	4.6	
Text Field:	203000 2.1.20	
Comments:	Level	RO
	Tier	2

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

	Group	1
	KA # and Rating	203000 2.1.20 (4.6/4.6)
	KA Statement	203000 RHR/LPCI: Injection Mode 2.1.20 Ability to interpret and execute procedure steps.
	References	T-270 Unit 2, Rev.13 Drawing E21-1040-E-005, Sheet 001, Rev.18 Drawing E11-1040-E-005, Sheet 001, Rev.26
	Examinee References	None
	Learning Objective	No specified objective
	Question source	New
	Question history	None
	Cognitive level	Higher
	10 CFR 55	41.7, 41.8, 41.10
	Comments	None

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

72

ID: 1104004

Points: 1.00

Unit 1 is operating at 100% power when the following occurs:

- The "preferred" input source to 1AD185 is lost

WHICH ONE of the following identifies how the loads on 1AY185 are remaining energized?

- A. From 1AY160 through the 1AD185 Static Switch
- B. From 1AY160 bypassing the 1AD185 Static Switch
- C. Directly from 1AD160 through the 1AD185 Static Switch
- D. Directly from 1AD160 bypassing the 1AD185 Static Switch

Answer: A

Answer Explanation

Refer to electrical drawing E-0032, Sheet 2. When the normal "Preferred" input source (125 VDC from 1AD108 DC Distribution Panel) to the APRM UPS, 1AD185, is lost, the 1AD185 Static Switch rapidly transfers over to the "Alternate" input source, which is 120 VAC from the 'A' RPS/UPS Distribution Panel 1AY160.

'A' is correct: From 1AY160 through the 1AD185 Static Switch. Correct for the reasons described above.

'B' is wrong: From 1AY160 bypassing the 1AD185 Static Switch. Plausible to the examinee who forgets that the Static Switch is the vital component necessary for the 1AY185 loads to remain "uninterruptibly" energized when the 1AD185 "inverter" section fails to produce its normal 120 VAC output (because of the loss of the required 125 VDC input to the inverter section).

'C' is wrong: Directly from 1AD160 through the 1AD185 Static Switch. Plausible to the examinee who mistakenly believes that 1AD185 is a load directly off of the 'A' RPS/UPS (1AD160), rather than being simply just another load on the 1AY160 Distribution Panel.

'D' is wrong: Directly from 1AD160 bypassing the 1AD185 Static Switch. Plausible for the same reasons as that for choices 'B', 'C'.

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

Question 72 Info		
Question Type:	Multiple Choice	
Status:	Active	
Always select on test?	No	
Authorized for practice?	No	
Points:	1.00	
Time to Complete:	3	
Difficulty:	2.00	
System ID:	1104004	
User-Defined ID:	REV 00, 11/17/14	
Cross Reference Number:	LGSOPS0094.7	
Topic:	Recall how 1AY185 loads remain energized on 1AD185 loss of DC input	
Num Field 1:	2.8	
Num Field 2:	3.1	
Text Field:	262002 K6.02	
Comments:	<div> <div>Level</div> <div>RO</div> </div> <div> <div>Tier</div> <div>2</div> </div> <div> <div>Group</div> <div>1</div> </div> <div> <div>KA # and Rating</div> <div>262002 K6.02 (2.8/3.1)</div> </div> <div> <div>KA Statement</div> <div>262002 UPS (AC/DC)</div> </div> <div> <div></div> <div>Knowledge of the effect that a loss or malfunction of the following will have on the UNINTERRUPTABLE POWER SUPPLY (A.C./D.C.): K6.02 D.C. electrical power</div> </div> <div> <div>References</div> <div>Drawing E-0032, Sheet 2, Rev.39</div> </div> <div> <div>Examinee</div> <div>None</div> </div> <div> <div>References</div> <div></div> </div> <div> <div>Learning</div> <div>LGSOPS0094.7</div> </div> <div> <div>Objective</div> <div></div> </div> <div> <div>Question source</div> <div>New</div> </div> <div> <div>Question history</div> <div>None</div> </div> <div> <div>Cognitive level</div> <div>Lower</div> </div> <div> <div>10 CFR 55</div> <div>41.7</div> </div> <div> <div>Comments</div> <div>None</div> </div>	

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

73

ID: 1104005

Points: 1.00

Unit 1 is operating at 80% power.

At the Bypass Valve (BPV) Jack screen, the PRO does the following:

- Presses the FULL OPEN button, then
- Presses the HOLD button, 10 seconds later

WHICH ONE of the following describes:

- (1) how the BPVs respond, and
- (2) how the TCVs respond?

- A. (1) one or more have opened, but not all of them
(2) have not changed position
- B. (1) one or more have opened, but not all of them
(2) have partially closed
- C. (1) all have partially opened
(2) have partially closed
- D. (1) all have partially opened
(2) have not changed position

Answer: B

Answer Explanation

Refer to the DEHC Simplified Logic, shown below.

Initially, a 0% signal appears at the Bypass Control Unit HVG (>); it's the larger of the two input signals appearing there (the other signal being a -1% signal coming from the Bypass Control Unit summer), and so passes through the HVG to the LVG, where it is the smaller of two signals (the other being the ~16% signal from the MCFL summer). Thus, the 0% signal passes through the LVG to become a 0% BPV Flow Demand signal, keeping the BPVs closed.

When the operator presses the FULL OPEN button, the BPVs begin to ramp open, in sequence. Only when one BPV is fully open does the next BPV (in the sequence) begin to ramp open. If the operator does not press the HOLD button, all 9 BPVs will eventually ramp, in sequence, to 100% open.

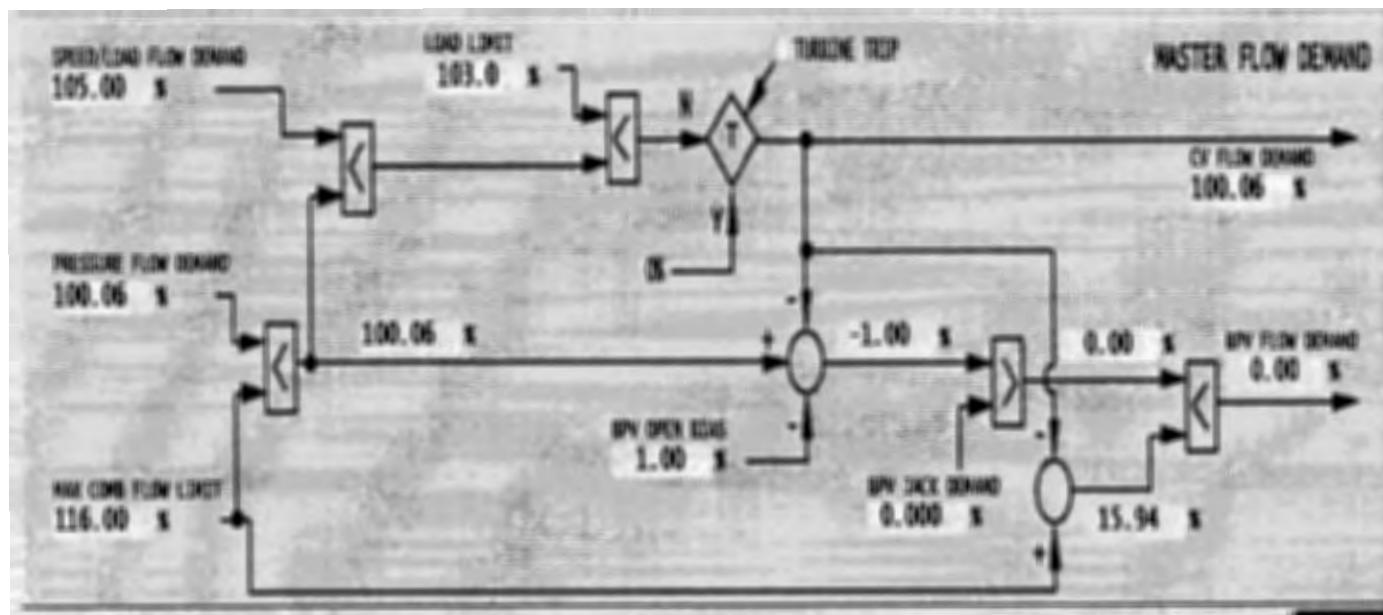
Pressing the HOLD button simply pauses (stops) the ramping-up of the BPV Jack Demand signal. Because the operator has pressed HOLD just 10 seconds after pressing FULL OPEN, the result will be that one or more have opened, but not all of them.

Whatever the actual BPV Jack Demand signal value might be when the HOLD button is pressed, that signal is certainly larger than the prior 0% signal, discussed above. To make our point, suppose that signal is paused (HOLD) when it is 5%. This 5% signal is processed in exactly the same manner as earlier described for the 0% signal; except, now, a 5% BPV Flow Demand signal results in one or more of the BPVs partially opening, in sequence, enough to pass 5% steam flow to the main condenser.

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

The BPV opening causes a drop in reactor pressure and PAM pressure. The drop in PAM pressure results in a smaller output signal from the Pressure Control Unit, which still passes through both LVGs to ultimately become a new smaller CV Flow Demand (% open) signal, causing the TCVs to close enough to compensate for the steam flow being diverted to the main condenser via the open BPV.



'B' is correct: (1) one or more have opened, but not all of them; (2) have partially closed. Correct for the reasons described above.

'A' is wrong: (1) one or more have opened, but not all of them; (2) have not changed position. Plausible to the examinee who does not fully comprehend how the Pressure Regulator functions; i.e., that when something occurs that results in bypassing some steam flow to the main condenser, the accompanying PAM pressure drop necessarily cause the TCVs to throttle closed enough to compensate for the steam loss and at the same time restore PAM pressure to the Pressure Set setpoint.

'C' is wrong: (1) all have partially opened; (2) have partially closed. Plausible to the examinee who still somewhat unfamiliar with the Unit 1 Digital EHC modification (installed during the Spring, 2014 refueling outage). That examinee incorrectly believes that the fundamental manner in which the various turbine valves, controlled by EHC, behave is different than before the modification. This is wrong thinking...the BPVs are still designed to open in sequence; they do not, under any circumstances, open simultaneously.

'D' is wrong: (1) all have partially opened; (2) have not changed position. Plausible for reasons similar to that for choices 'A', 'C'.

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

Question 73 Info		
Question Type:	Multiple Choice	
Status:	Active	
Always select on test?	No	
Authorized for practice?	No	
Points:	1.00	
Time to Complete:	4	
Difficulty:	2.50	
System ID:	1104005	
User-Defined ID:	REV 00, 11/17/14	
Cross Reference Number:	LGSOPS0031B.4	
Topic:	Unit 1 DEHC - Predict BPV/TCV response to operating BPV Jack	
Num Field 1:	3.8	
Num Field 2:	3.9	
Text Field:	241000 K1.06	
Comments:	<div> <div>Level</div> <div>RO</div> </div> <div> <div>Tier</div> <div>2</div> </div> <div> <div>Group</div> <div>2</div> </div> <div> <div>KA # and Rating</div> <div>241000 K1.06 (3.8/3.9)</div> </div> <div> <div>KA Statement</div> <div>241000 Reactor/Turbine Pressure Regulator Knowledge of the physical connections and/or cause-effect relationships between REACTOR/TURBINE PRESSURE REGULATING SYSTEM and the following: K1.06 Bypass valves</div> </div> <div> <div>References</div> <div>DEHC Simplified Logic diagram</div> </div> <div> <div>Examinee</div> <div>None</div> </div> <div> <div>References</div> <div></div> </div> <div> <div>Learning</div> <div>LGSOPS0031B.4</div> </div> <div> <div>Objective</div> <div></div> </div> <div> <div>Question source</div> <div>Bank 556763</div> </div> <div> <div>Question history</div> <div>None</div> </div> <div> <div>Cognitive level</div> <div>Higher</div> </div> <div> <div>10 CFR 55</div> <div>41.5</div> </div> <div> <div>Comments</div> <div>None</div> </div>	

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

74

ID: 1104006

Points: 1.00

An important plant system has become unavailable (unable to provide its design function).

WHICH ONE of the following must be controlled as "Protected Equipment", per OP-LG-108-117-1000 (Limerick Protected Equipment Program)?

The redundant train/system to be "protected", if lost, could result in...

- A. any unplanned main generator load reduction
- B. a PARAGON risk color of YELLOW
- C. a main generator load reduction of ≥ 15 MWe
- D. a Tech Spec LCO Action requiring the plant to be in HOT SHUTDOWN within 12 hours

Answer: D

Answer Explanation

Refer to OP-LG-108-117-1000, Section 4.1.1.

'D' is correct: a Tech Spec LCO Action requiring the plant to be in HOT SHUTDOWN within 12 hours. Correct per Section 4.1.1.2.

'A' is wrong: any unplanned main generator load reduction. Per Section 4.1.1.3, the threshold is > 20 MWe reduction in generator capacity. Plausible to the examinee who recalls something about an unplanned load reduction but doesn't recall there being a threshold that reduction.

'B' is wrong: a PARAGON risk color of YELLOW. Per Section 4.1.1.1, only if it would result in a RED risk color. Plausible to the examinee who recognizes the importance/"visibility" of on-line risk assessment and is therefore distracted by the idea of any increased risk. NOTE - "PARAGON" is the name of the computer program used at LGS to perform risk assessments.

'C' is wrong: a main generator load reduction of ≥ 15 MWe. Per Section 4.1.1.3, the threshold is > 20 MWe reduction in generator capacity. Plausible to the examinee who recognizes a 15 MWe loss as being greater than 1% of the 100% power real load of approximately 1200 MWe.

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

Question 74 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	4
Difficulty:	3.00
System ID:	1104006
User-Defined ID:	REV 00, 11/17/14
Cross Reference Number:	NONE
Topic:	Recall Protected Equipment process requirements
Num Field 1:	3.9
Num Field 2:	4.3
Text Field:	2.2.14
Comments:	<div> <div>Level</div> <div>RO</div> </div> <div> <div>Tier</div> <div>3</div> </div> <div> <div>Group</div> <div>N/A</div> </div> <div> <div>KA # and Rating</div> <div>2.2.14 (3.9/4.3)</div> </div> <div> <div>KA Statement</div> <div>2.2.14 Knowledge of the process for controlling equipment configuration or status.</div> </div> <div> <div>References</div> <div>OP-LG-108-117-1000, Rev.5</div> </div> <div> <div>Examinee</div> <div>None</div> </div> <div> <div>References</div> <div></div> </div> <div> <div>Learning</div> <div>No specified objective</div> </div> <div> <div>Objective</div> <div></div> </div> <div> <div>Question source</div> <div>New</div> </div> <div> <div>Question history</div> <div>None</div> </div> <div> <div>Cognitive level</div> <div>Lower</div> </div> <div> <div>10 CFR 55</div> <div>41.10</div> </div> <div> <div>Comments</div> <div>None</div> </div>

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

75

ID: 1104526

Points: 1.00

Plant conditions:

- Unit 1 is in OPCIION 1
- Unit 2 is in OPCIION 2 with GP-2, STARTUP in progress

A valid OBE EXCEEDED alarm is received and is confirmed by the U.S. Geological Survey.

WHICH ONE of the following is a required operator action?

- A. Manually scram both reactors
- B. Perform GP-4 Rapid Plant Shutdown on Unit 1
Manually scram Unit 2 reactor
- C. Perform GP-4 Rapid Plant Shutdown on both Units
- D. Perform GP-3 Normal Plant Shutdown on both Units

Answer: A

Answer Explanation

Per SE-5 (Earthquake), Steps 4.2 and 4.5. The "valid" comment in the stem translates to "evidence of the seismic event" (mentioned in Step 4.5). Though Step 4.5 is not an "Immediate Operator Action" initial license candidates are expected to recall manual scram/GP-4 Rapid Shutdown actions, no matter where they exist in procedure.

'A' is correct: Manually scram both reactors. Correct for the reasons described above.

'B' is wrong: Perform GP-4 Rapid Plant Shutdown on Unit 1; Manually scram Unit 2 reactor. Very plausible to the examinee who considers that, whenever practical, LGS procedures direct us to perform a GP-4 Rapid Plant Shutdown (i.e., running Recirc Pumps to minimum speed and transferring house loads to the startup buses before scrambling the reactor) in order to minimize the plant transient. The fact that Unit 2 is only in OPCIION 2 during a startup, the idea of simply scrambling the reactor (i.e., without concern for the severity of a plant transient) makes this answer choice all the more distracting.

'C' is wrong: Perform GP-4 Rapid Plant Shutdown on both Units. Plausible for reasons similar to that for choice 'B'; except, here, the examinee considers it more prudent to minimize the plant transient for both Units. This examinee has neglected to consider that with Unit 2 in OPCIION 2, its house loads are still on the startup buses and its Total Core Flow is well below 60% (i.e., the target flow for the reduction in Recirc directed by GP-4).

'D' is wrong: Perform GP-3 Normal Plant Shutdown on both Units. Plausible to the examinee who does not recognize the significance of an OBE earthquake and/or confuses it with an SSE earthquake. As such, the examinee is compelled to believe that an orderly plant shutdown of both Units is sufficient to mitigate the effects of the OBE.

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

Question 75 Info																														
Question Type:	Multiple Choice																													
Status:	Active																													
Always select on test?	No																													
Authorized for practice?	No																													
Points:	1.00																													
Time to Complete:	3																													
Difficulty:	2.00																													
System ID:	1104526																													
User-Defined ID:	REV 00, 11/17/14																													
Cross Reference Number:	LLOT1563.02																													
Topic:	SE-5 - Recall Requirements for Manual Scram																													
Num Field 1:	4.0																													
Num Field 2:	4.2																													
Text Field:	2.4.11																													
Comments:	<table><tr><td>Level</td><td>RO</td></tr><tr><td>Tier</td><td>3</td></tr><tr><td>Group</td><td>N/A</td></tr><tr><td>KA # and Rating</td><td>2.4.11 (4.0/4.2)</td></tr><tr><td>KA Statement</td><td>2.4.11 Knowledge of abnormal condition procedures.</td></tr><tr><td>References</td><td>SE-5, Rev.35</td></tr><tr><td>Examinee</td><td>None</td></tr><tr><td>References</td><td></td></tr><tr><td>Learning Objective</td><td>LLOT1563.02 (in lesson plan LGSOPS2000)</td></tr><tr><td>Question source</td><td>Bank 558648</td></tr><tr><td>Question history</td><td>None</td></tr><tr><td>Cognitive level</td><td>Lower</td></tr><tr><td>10 CFR 55</td><td>41.10</td></tr><tr><td>Comments</td><td>None</td></tr></table>		Level	RO	Tier	3	Group	N/A	KA # and Rating	2.4.11 (4.0/4.2)	KA Statement	2.4.11 Knowledge of abnormal condition procedures.	References	SE-5, Rev.35	Examinee	None	References		Learning Objective	LLOT1563.02 (in lesson plan LGSOPS2000)	Question source	Bank 558648	Question history	None	Cognitive level	Lower	10 CFR 55	41.10	Comments	None
Level	RO																													
Tier	3																													
Group	N/A																													
KA # and Rating	2.4.11 (4.0/4.2)																													
KA Statement	2.4.11 Knowledge of abnormal condition procedures.																													
References	SE-5, Rev.35																													
Examinee	None																													
References																														
Learning Objective	LLOT1563.02 (in lesson plan LGSOPS2000)																													
Question source	Bank 558648																													
Question history	None																													
Cognitive level	Lower																													
10 CFR 55	41.10																													
Comments	None																													

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

76

ID: 1102804

Points: 1.00

SRO

Unit 1, GP-2 Normal Plant Startup is in progress, with the following:

- Control rod withdrawals are in progress
- Reactor power has reached 15%

Per Tech Spec 3.6.6.3.a, drywell/suppression chamber oxygen concentration must be < 4% by volume within 24 hours after raising power above 15%.

WHICH ONE of the following is used to track this LCO requirement until it is satisfied?

- A. LCO Log
- B. Short Duration Time Clock (SDTC) Log
- C. Degraded Equipment Log (DEL)
- D. Potential LCO Action Request (LCOAR)

Answer: A

Answer Explanation

Per GP-2, Step 3.5.5.5, [the CRS] must initiate an LCO Log entry to ensure that the applicable Surveillance Test is performed to verify <4% oxygen within 24 hours after raising power above 15% (i.e., the statement of LCO 3.6.6.3.a).

'A' is correct: LCO Log. Correct for the reason described above.

'B' is wrong: Short Duration Time Clock (SDTC) Log. This log is described in OP-AA-108-104 (Technical Specification Compliance), Section 2.1. The SDTC is used for tracking components made inoperable for testing when an LCO Action entry is not required. Because the SDTC "may also apply to short term LCOs...", it is especially plausible to the examinee who cannot recall the GP-2 requirement to use the LCO Log.

'C' is wrong: Degraded Equipment Log (DEL). This log is described in Section 2.3 (including 2.3.1) of OP-Aa-108-104. It is used to list inoperable and degraded SSCs. A plausible choice for reasons similar to that for choice 'B'.

'D' is wrong: Potential LCO Action Request (LCOAR). The LCOAR terms refers simply to a type of Action Request generated using the computerized AR system. An LCOAR would be generated to track a component that, in itself, is known to be inoperable, but by itself, that inoperability doesn't yet require an LCO Action entry. Plausibility speaks for itself.

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

Question 76 Info																											
Question Type:	Multiple Choice																										
Status:	Active																										
Always select on test?	No																										
Authorized for practice?	No																										
Points:	1.00																										
Time to Complete:	3																										
Difficulty:	2.50																										
System ID:	1102804																										
User-Defined ID:	REV 00, 11/17/14																										
Cross Reference Number:																											
Topic:	(SRO) Recall how to track an LCO during a normal plant startup																										
Num Field 1:	3.1																										
Num Field 2:	4.6																										
Text Field:	2.2.23																										
Comments:	<table> <tr> <td>Level</td><td>SRO</td></tr> <tr> <td>Tier</td><td>3</td></tr> <tr> <td>Group</td><td>N/A</td></tr> <tr> <td>KA # and Rating</td><td>2.2.23 (3.1/4.6)</td></tr> <tr> <td>KA Statement</td><td>2.2.23 Ability to track Technical Specification limiting conditions for operations.</td></tr> <tr> <td>References</td><td>GP-2, Rev.153 OP-AA-108-104, Rev.1</td></tr> <tr> <td>Examinee References</td><td>None</td></tr> <tr> <td>Learning Objective</td><td>No specified objective</td></tr> <tr> <td>Question source</td><td>New</td></tr> <tr> <td>Question history</td><td>None</td></tr> <tr> <td>Cognitive level</td><td>Lower</td></tr> <tr> <td>10 CFR 55</td><td>41.10, 43.2, 43.5</td></tr> <tr> <td>Comments</td><td>None</td></tr> </table>	Level	SRO	Tier	3	Group	N/A	KA # and Rating	2.2.23 (3.1/4.6)	KA Statement	2.2.23 Ability to track Technical Specification limiting conditions for operations.	References	GP-2, Rev.153 OP-AA-108-104, Rev.1	Examinee References	None	Learning Objective	No specified objective	Question source	New	Question history	None	Cognitive level	Lower	10 CFR 55	41.10, 43.2, 43.5	Comments	None
Level	SRO																										
Tier	3																										
Group	N/A																										
KA # and Rating	2.2.23 (3.1/4.6)																										
KA Statement	2.2.23 Ability to track Technical Specification limiting conditions for operations.																										
References	GP-2, Rev.153 OP-AA-108-104, Rev.1																										
Examinee References	None																										
Learning Objective	No specified objective																										
Question source	New																										
Question history	None																										
Cognitive level	Lower																										
10 CFR 55	41.10, 43.2, 43.5																										
Comments	None																										

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

77

ID: 1102806

Points: 1.00

SRO

Unit 2 plant conditions:

- OPCON 5
- Unit 2 has been shutdown for 10 days for 2R12
- Core off-load is in progress
- Fuel Pools are cross-connected
- RPV coolant temperature is 140°F
- 'A' Shutdown Cooling is in-service

Operators isolate Shutdown Cooling due to a leak in the suction header piping between the HV-51-2F008 and HV-51-2F009 valves.

WHICH ONE of the following identifies the approximate time until 200°F is reached?

- A. 1.5 hours
- B. 2.0 hours
- C. 7.8 hours
- D. 11.7 hours

Answer: D

Answer Explanation

ON-121 (Loss of Shutdown Cooling (SDC)), Section 2.1.3 NOTE, directs operators to use the latest Decay Heat Load Report "time to boil" curves to assess the impact of the SDC loss on reactor cavity water (and spent fuel pool water) temperature.

'D' is correct: 11.7 hours. Refer to the "2R12 Decay Heat Load Report". Stem conditions indicate that a "core off-load is in progress" (meaning that the reactor cavity is flooded up), and that SFPs are cross-connected; therefore, the "Time to 200F" Table shown on page 9 of 19 in that report applies here. With an Initial Temperature of 140 F, "10 days after shutdown", the Time to 200°F is shown as approximately **11.7 hours**.

'A' is wrong: 1.5 hours. This choice is plausible to the examinee who inappropriately uses the Time to 200°F Table shown on page 12 of 19 in the Decay Heat Load Report, which applies only when the reactor cavity level is at /near the RPV Head Flange during fuel moves. This examinee doesn't recognize that the "core off-load is in progress" statement necessarily excludes this particular Table.

'B' is wrong: 2.0 hours. This choice is plausible to the examinee who inappropriately uses the Time to 200°F Table shown on page 13 of 19 in the Decay Heat Load Report, which applies only when the reactor cavity level is at /near the RPV Head Flange after fuel moves are complete. This examinee not only doesn't recognize where cavity level is at; he/she also has disregarded the stem condition that a "core off-load is in progress" (i.e., that fuel moves are NOT complete).

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

'C' is wrong: 7.8 hours. This choice is plausible to the examinee who inappropriately uses the Time to 200°F Table shown on page 11 of 19 in the Decay Heat Load Report, which applies only if the SFPs are NOT cross-connected. This careless examinee has neglected the stem condition that "Fuel pools are cross-connected."

Question 77 Info		
Question Type:	Multiple Choice	
Status:	Active	
Always select on test?	No	
Authorized for practice?	No	
Points:	1.00	
Time to Complete:	5	
Difficulty:	3.00	
System ID:	1102806	
User-Defined ID:	REV 00, 11/17/14	
Cross Reference Number:	LGSOPS1550.IL3	
Topic:	(SRO) Loss of SDC in OPCON 5 - Determine Time to 200 Degrees	
Num Field 1:	4.0	
Num Field 2:	4.6	
Text Field:	295021 2.4.21	
Comments:	<div> <div>Level</div> <div>SRO**</div> <div>Tier</div> <div>1</div> <div>Group</div> <div>1</div> <div>KA # and Rating</div> <div>295021 2.4.21 (4.0/4.6)</div> <div>KA Statement</div> <div>295021 Loss of Shutdown Cooling</div> <div>2.4.21 Knowledge of the parameters and logic used to assess the status of safety functions, such as reactivity control, core cooling and heat removal, reactor coolant system integrity, containment conditions, radioactivity release control, etc.</div> <div>References</div> <div>ON-121, Rev.29</div> <div>2R12 Decay Heat Load Report</div> <div>2R12 Decay Heat Load Report</div> <div>Examinee References</div> <div>Learning</div> <div>LGSOPS1550.IL3</div> <div>Objective</div> <div>Question source</div> <div>Bank 825315</div> <div>Question history</div> <div>None</div> <div>Cognitive level</div> <div>Higher</div> <div>10 CFR 55</div> <div>43.5</div> <div>Comments</div> <div>**Justification for this item being "SRO-only": At LGS, although all licensed operators (RO/SRO) are equally responsible for the information contained in, and the actions directed by, ON-121 (Loss of Shutdown Cooling), only the SRO is involved in determining the "Time to 200°F" using that Unit's latest "Decay Heat Load Report".</div> </div>	

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

78

ID: 1102809

Points: 1.00

SRO

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

- Complete sustained loss of RECW

Per ON-113 (Loss of RECW), operators:

- Perform a GP-4 Rapid Plant Shutdown
- Trip both Recirc Pumps

After the successful scram, operators commence a controlled plant cooldown.

WHICH ONE of the following identifies the NRC ENS Notification required for this event?

- A. 1 hour per SAF 1.1 - Declaration of Emergency Class
- B. 4 hours per SAF 1.2 - Plant Shutdown Required by Tech Specs
- C. 4 hours per SAF 1.6 - RPS Actuation
- D. 8 hours per SAF 1.4 - Degraded or Unanalyzed Condition

Answer: C

Answer Explanation

Refer to the LGS Emergency Action Level (EAL) "Hot Matrix". Nothing in the stem conditions indicates an EAL threshold has been met; thus, no Emergency Classification is required. Refer to Exelon Reportability Manual, LS-AA-1110, specifically:

- SAF 1.1 (Declaration of Emergency Class), a 1-hour report, which does not apply for this event.
- SAF 1.2 (Plant Shutdown Required by Tech Specs), a 4-hour report. This SAF does not apply for this event because the reason operators having inserted the manual scram (per ON-113, Loss of RECW) is not tied to any Tech Spec action. Rather, the reason is based on a concern for potential Thermal Hydraulic Instabilities (THI) if the reactor were to continue operating with no operating Recirc Pumps (refer to ON-113 basis "Discussion" of Section 4.0).
- SAF 1.4 (Degraded or Unanalyzed Condition), an 8-hour report. This SAF does not apply for this event because those reporting criteria are concerned only with a "serious degradation" of the plant's principle safety barriers, or the plant operating in some type of "unanalyzed" condition. Nothing in the stem indicates any of those criteria exist.
- SAF 1.6 (RPS Actuation), a 4-hour report. A thorough review reveals that any RPS actuation (so long as it is neither an "invalid" one, nor one part of "preplanned testing") is included in those reporting criteria. The manual scram that occurred for this Loss of RECW event warrants an NRC ENS notification per SAF 1.6

'C' is correct: 4 hours per SAF 1.6 - RPS Actuation. Correct for the reasons described above.

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

'A' is wrong: 1 hour per SAF 1.1 - Declaration of Emergency Class. Plausible to the examinee who mistakenly believes that the event meets the threshold for EAL "MU7" (Inability to reach required shutdown within Tech Spec limits).

'B' is wrong: 4 hours per SAF 1.2 - Plant Shutdown Required by Tech Specs. Plausible to the examinee who inappropriately ties the shutdown required by ON-113 with the shutdown required by Tech Spec 3.4.1.1, specifically Action 'b' which requires the plant be in HOT SHUTDOWN within 12 hours of having no operating Recirc Pumps.

'D' is wrong: 8 hours per SAF 1.4 - Degraded or Unanalyzed Condition. Plausible to the examinee who does recall the ON-113 bases regarding inserting a manual scram to preclude the possibility of THI and therefore concludes that the need to avoid THI (an unanalyzed condition) fits with the reporting criteria of SAF 1.4.

Question 78 Info		
Question Type:	Multiple Choice	
Status:	Active	
Always select on test?	No	
Authorized for practice?	No	
Points:	1.00	
Time to Complete:	5	
Difficulty:	3.00	
System ID:	1102809	
User-Defined ID:	REV 00, 11/17/14	
Cross Reference Number:	LGSOPS1550	
Topic:	(SRO) Determine NRC Reportability for Loss of RECW	
Num Field 1:	2.7	
Num Field 2:	4.1	
Text Field:	295018 2.4.30	
Comments:	Level	SRO
	Tier	1
	Group	1
	KA # and Rating	295018 2.4.30 (2.7/4.1)
	KA Statement	295018 Partial or Total Loss of CCW 2.4.30 Knowledge of events related to system operation/status that must be reported to internal organizations or external agencies, such as the State, the NRC, or the transmission system operator.
	References	ON-113, Rev.23 U/1 Tech Spec 3.4.1.1, latest LS-AA-1110, Rev.21 EP-AA-1008, Rev.26
	Examinee References	None
	Learning Objective	LGSOPS1550, no specified objective

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

	Question source	New
	Question history	None
	Cognitive level	Higher
	10 CFR 55	43.5
	Comments	None

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

79

ID: 1102824

Points: 1.00

SRO

Unit 1 is operating at 100% power.

Operators determine that Suppression Pool water level is 21 feet, down slow.

WHICH ONE of the following identifies the plant shutdown requirement if Suppression Pool level cannot be restored?

- A. Be in STARTUP within 7 hours
- B. Be in HOT SHUTDOWN within 13 hours
- C. Perform a T-102 shutdown if the level cannot be maintained above 18 feet
- D. Perform a T-102 shutdown if the level cannot be maintained above 13.5 feet

Answer: B

Answer Explanation

The 21 foot suppression pool water level requires an entry into Tech Spec LCO 3.6.2.1, as well as entry into T-102 (Primary Containment Control). LCO 3.6.2.1 Action 'a' requires that level be restored within 1 hour, otherwise place the plant in HOT SHUTDOWN within the next 12 hours (i.e., a total of 13 hours from the time of discovering the out-of-spec level).

The Suppression Pool Level Leg (SP/L) of T-102 requires that HPCI be secured (if running) if level cannot be maintained above 18 feet (Step SP/L-4) and requires operators to either swap ECCS pump suction over to the CST, or secure those pumps, if level cannot be maintained above 13.5 feet (Step SP/L-5). When level cannot be maintained above 12 feet, a rapid plant shutdown (known as a "T-102 shutdown") is required (Steps SP/L-7 and 8).

'B' is correct: Be in HOT SHUTDOWN within 13 hours. Correct for the reasons described above.

'A' is wrong: Be in STARTUP within 7 hours. This alludes to the plant shutdown required by LCO 3.0.3 (i.e., 1 hour to initiate action to shut down the plant plus another 6 hours to be in STARTUP (OPCON 2), for a total of 7 hours). Plausible to the examinee who recognizes that the suggested T-102 actions are wrong, but who does not recall the LCO 3.6.2.1 Actions, or who mistakenly believes that LCO 3.0.3 applies for this situation.

'C' is wrong: Perform a T-102 shutdown if the level cannot be maintained above 18 feet. Plausible to the examinee who fails to recall the LCO Actions, is distracted by the SP/L leg of T-102, and fails to recall that a T-102 shutdown isn't required until level gets below 12 feet.

'D' is wrong: Perform a T-102 shutdown if the level cannot be maintained above 13.5 feet. Plausible for reasons identical to that for choice 'C'.

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

Question 79 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	3
Difficulty:	2.50
System ID:	1102824
User-Defined ID:	REV 00, 11/17/14
Cross Reference Number:	LLOT0060A.IL10
Topic:	(SRO) Recall plant shutdown requirements TS 3.6.2.1 for low supp pool level
Num Field 1:	3.4
Num Field 2:	4.7
Text Field:	295030 2.2.40
Comments:	<div> <div>Level</div> <div>SRO</div> </div> <div> <div>Tier</div> <div>1</div> </div> <div> <div>Group</div> <div>1</div> </div> <div> <div>KA # and Rating</div> <div>295030 2.2.40 (3.4/4.7)</div> </div> <div> <div>KA Statement</div> <div>295030 Low Suppression Pool Water Level 2.2.40 Ability to apply Technical Specifications for a system.</div> </div> <div> <div>References</div> <div>U/1 Tech Spec 3.6.2.1, latest T-102, Rev.24</div> </div> <div> <div>Examinee References</div> <div>None</div> </div> <div> <div>Learning Objective</div> <div>LLOT0060A.IL10</div> </div> <div> <div>Question source</div> <div>New</div> </div> <div> <div>Question history</div> <div>None</div> </div> <div> <div>Cognitive level</div> <div>Lower</div> </div> <div> <div>10 CFR 55</div> <div>43.2</div> </div> <div> <div>Comments</div> <div>None</div> </div>

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

80

ID: 1102826

Points: 1.00

SRO

Plant conditions:

- Unit 1 is in OPGON 5, with CORE ALTERATIONS in progress
- Unit 2 is operating at 100% power

Due to heavy offsite grid loading, operators are executing E-5 (Grid Emergency).

Operators determine that actual voltage on the 500 KV System is 490 KV.

WHICH ONE of the following identifies the Tech Spec required action, if any, for each Unit?

- A. Unit 1: No Tech Spec required action
Unit 2: Restore the 500 KV system to OPERABLE within 24 hours
- B. Unit 1: No Tech Spec required action
Unit 2: Restore the 500 KV system to OPERABLE within 72 hours
- C. Unit 1: Restore the 500 KV system to OPERABLE within 7 days
Unit 2: Restore the 500 KV system to OPERABLE within 72 hours
- D. Unit 1: Immediately suspend CORE ALTERATIONS
Unit 2: Restore the 500 KV system to OPERABLE within 24 hours

Answer: B

Answer Explanation

Per E-5, Section 3.13.1 and its Table, the minimum allowable voltage on the 500 KV system is 498 KV. With only 490 KV actual voltage, Step 3.13.1 directs operators declare the [affected] "offsite source" inoperable and take the Action of Tech Spec 3.8.1. An inoperable 500 KV system takes away only one Tech Spec offsite source from each of the LGS Units.

Per Unit 1 Tech Spec 3.8.1.2 (AC Sources - Shutdown), only one of the two offsite sources is required to be OPERABLE. Since the 230 KV system is still OPERABLE, there is no LCO 3.8.1.2 entry required for Unit 1.

Per Unit 2 Tech Spec 3.8.1.1 (AC Sources - Operating), two offsite sources are required to be OPERABLE. With the 500 KV system inoperable, LCO 3.8.1.1 entry is required and ACTION 'f' applies...allowing 72 hours to restore the 500 KV system to OPERABLE status.

'B' is correct: Unit 1: No Tech Spec required action; Unit 2: Restore the 500 KV system to OPERABLE within 72 hours. Correct for the reasons described above.

'A' is wrong: Unit 1: No Tech Spec required action; Unit 2: Restore the 500 KV system to OPERABLE within 24 hours. Plausible to the examinee who cannot recall the Allowed Outage Time (AOT) for a single inop offsite source and so applies the two inop offsite sources AOT of ACTION 'g', which is 24 hours.

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

'C' is wrong: Unit 1: Restore the 500 KV system to OPERABLE within 7 days; Unit 2: Restore the 500 KV system to OPERABLE within 72 hours. Plausible to the examinee who fails to recall that the single inop source does not require an LCO entry for Unit 1; that examinee does recognize that the 72-hour AOT for the operating Unit 2 is correct and therefore concludes that something more generous than 72 hours (such as 7 days) is appropriate for the shutdown Unit 1.

'D' is wrong: Unit 1: Immediately suspend CORE ALTERATIONS; Unit 2: Restore the 500 KV system to OPERABLE within 24 hours. This choice would be correct if it were the 230 KV System that is inoperable. Per E-5, such would require that BOTH offsite sources (to both the 10 Startup Bus and 20 Startup Bus) be declared inoperable. In that case, with no (zero) offsite sources operable, Unit 2 Tech Spec Action 3.8.1.1.g would apply, requiring the restoration of the 230 KV system to OPERABLE within 24 hours. Similarly, Unit 1 Tech Spec Action 3.8.1.2.a would apply, requiring the immediate suspension of Core Alterations. Plausible for these reasons.

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

Question 80 Info																																		
Question Type:	Multiple Choice																																	
Status:	Active																																	
Always select on test?	No																																	
Authorized for practice?	No																																	
Points:	1.00																																	
Time to Complete:	4																																	
Difficulty:	2.50																																	
System ID:	1102826																																	
User-Defined ID:	REV 00, 11/17/14																																	
Cross Reference Number:	LLOT0035.11B																																	
Topic:	(SRO) Evaluate impact of exceeding the 500 KV system minimum voltage limit																																	
Num Field 1:	3.2																																	
Num Field 2:	3.8																																	
Text Field:	700000 AA2.05																																	
Comments:	<table><tr><td>Level</td><td>SRO</td></tr><tr><td>Tier</td><td>1</td></tr><tr><td>Group</td><td>1</td></tr><tr><td>KA # and Rating</td><td>700000 AA2.05 (3.2/3.8)</td></tr><tr><td>KA Statement</td><td>700000 Generator Voltage and Electric Grid Disturbances</td></tr><tr><td></td><td>Ability to determine and/or interpret the following as they apply to GENERATOR VOLTAGE AND ELECTRIC GRID DISTURBANCES: AA2.05 Operational status of offsite circuit</td></tr><tr><td>References</td><td>E-5, Rev.21</td></tr><tr><td></td><td>U/1 Tech Spec 3.8.1.2, latest</td></tr><tr><td></td><td>U/2 Tech Spec 3.8.1.1, latest</td></tr><tr><td>Examinee References</td><td>E-5 (EXCLUDING the Attachments)</td></tr><tr><td>Learning Objective</td><td>LLOT0035.11B</td></tr><tr><td>Question source</td><td>New</td></tr><tr><td>Question history</td><td>None</td></tr><tr><td>Cognitive level</td><td>Higher</td></tr><tr><td>10 CFR 55</td><td>43.2, 43.5</td></tr><tr><td>Comments</td><td>None</td></tr></table>		Level	SRO	Tier	1	Group	1	KA # and Rating	700000 AA2.05 (3.2/3.8)	KA Statement	700000 Generator Voltage and Electric Grid Disturbances		Ability to determine and/or interpret the following as they apply to GENERATOR VOLTAGE AND ELECTRIC GRID DISTURBANCES: AA2.05 Operational status of offsite circuit	References	E-5, Rev.21		U/1 Tech Spec 3.8.1.2, latest		U/2 Tech Spec 3.8.1.1, latest	Examinee References	E-5 (EXCLUDING the Attachments)	Learning Objective	LLOT0035.11B	Question source	New	Question history	None	Cognitive level	Higher	10 CFR 55	43.2, 43.5	Comments	None
Level	SRO																																	
Tier	1																																	
Group	1																																	
KA # and Rating	700000 AA2.05 (3.2/3.8)																																	
KA Statement	700000 Generator Voltage and Electric Grid Disturbances																																	
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References	E-5, Rev.21																																	
	U/1 Tech Spec 3.8.1.2, latest																																	
	U/2 Tech Spec 3.8.1.1, latest																																	
Examinee References	E-5 (EXCLUDING the Attachments)																																	
Learning Objective	LLOT0035.11B																																	
Question source	New																																	
Question history	None																																	
Cognitive level	Higher																																	
10 CFR 55	43.2, 43.5																																	
Comments	None																																	

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

81

ID: 1104650

Points: 1.00

SRO

Unit 2 is operating at 100% power.

The CRS reviews the latest "Daily Jet Pump Operability" surveillance (ST-6-043-320-2) which reveals the following Conditions:

1. Indicated recirc loop flow differs by 11% from the established pump speed-loop flow characteristics
2. Indicated total core flow differs by 6% from the established total core flow derived from recirc loop flow measurements
3. Indicated diffuser-to-lower plenum d/p of a single jet pump (#3) differs from the established patterns by 14%
4. Indicated diffuser-to-lower plenum d/p for all other jet pumps differ from the established patterns by 8%

WHICH ONE of the following identifies (from the above list) the test data that requires the plant must be in HOT SHUTDOWN within 12 hours, per Tech Spec 3.4.1.2 (Jet Pumps)?

- A. Condition 3, alone
- B. Conditions 1 AND 3, combined
- C. Conditions 3 AND 4, combined
- D. Conditions 1, 2, AND 3, combined

Answer: B

Answer Explanation

Refer to Tech Spec 3.4.1.2, SR 4.4.1.2.a, which shows only three distinct "conditions" (as they are called in the SR language) that are used to determine the OPERABILITY of the jet pumps (i.e., to determine the existence of any failed jet pump). Those "conditions" are the first three conditions given in the question stem. The 4th "condition" in the stem doesn't exist in the SR as a stand-alone item. Per the SR, if any two (never just one) of the three conditions exist, together, the presence of a failed jet pump is presumed and the ACTION of Tech Spec 3.4.1.2 (12-hour HOT SHUTDOWN) must be taken.

'B' is correct: Conditions 1 AND 3, combined. Both Condition1 and Condition 3 exceed the 10% limit of the SR.

'A' is wrong: Condition 3, alone. Plausible to the examinee who recognizes that Condition 1 exceeds the associated 10% limit, but who forgets that it takes at least two of the three Conditions to be UNSAT before having to take the plant shutdown ACTION.

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

'C' is wrong: Conditions 3 AND 4, combined. Plausible to the examinee who "seems to recall" something about "at least two" Conditions needing to be UNSAT in order to determine a failed jet pump, but who doesn't recall exactly which two Conditions. That examinee is distracted by the fact that a single jet pump (#3) is behaving significantly different from the other 19 jet pumps, in that its d/p differs by more than 5%. To the uncertain examinee, the suggestion of 5% is plausible considering the 5% recirc loop flow mismatch limit (of Tech Spec 3.4.1.3) that exists right now, with the plant operating at 100% power (i.e., well above 70% of rated Core Flow).

'D' is wrong: Conditions 1, 2, AND 3, combined. Plausible to the examinee who forgets that it takes only two UNSAT Conditions in order to have to take the plant shutdown ACTION. That examinee is distracted by the fact that Condition 2 is greater than 5%, confusing that with the 5% recirc loop flow mismatch limit (of Tech Spec 3.4.1.3) that exists right now, with the plant operating at 100% power (i.e., well above 70% of rated Core Flow).

Question 81 Info																												
Question Type:	Multiple Choice																											
Status:	Active																											
Always select on test?	No																											
Authorized for practice?	No																											
Points:	1.00																											
Time to Complete:	4																											
Difficulty:	3.00																											
System ID:	1104650																											
User-Defined ID:	REV 00, 11/17/14																											
Cross Reference Number:	NONE																											
Topic:	(SRO) Recall Tech Spec 3.4.1.2 SR requirements for indications of a failed jet pump																											
Num Field 1:	3.7																											
Num Field 2:	4.1																											
Text Field:	295001 2.2.12																											
Comments:	<table><tr><td>Level</td><td>SRO</td></tr><tr><td>Tier</td><td>1</td></tr><tr><td>Group</td><td>1</td></tr><tr><td>KA # and Rating</td><td>295001 2.2.12 (3.7/4.1)</td></tr><tr><td>KA Statement</td><td>295001 Partial or Complete Loss of Forced Core Flow Circulation 2.2.12 Knowledge of surveillance procedures.</td></tr><tr><td>References</td><td>U/2 Tech Spec 3.4.1.2 (latest) U/2 Tech Spec 3.4.1.3 (latest)</td></tr><tr><td>Examinee References</td><td>None</td></tr><tr><td>Learning Objective</td><td>No specified objective</td></tr><tr><td>Question source</td><td>New</td></tr><tr><td>Question history</td><td>None</td></tr><tr><td>Cognitive level</td><td>Lower</td></tr><tr><td>10 CFR 55</td><td>43.2</td></tr><tr><td>Comments</td><td>None</td></tr></table>		Level	SRO	Tier	1	Group	1	KA # and Rating	295001 2.2.12 (3.7/4.1)	KA Statement	295001 Partial or Complete Loss of Forced Core Flow Circulation 2.2.12 Knowledge of surveillance procedures.	References	U/2 Tech Spec 3.4.1.2 (latest) U/2 Tech Spec 3.4.1.3 (latest)	Examinee References	None	Learning Objective	No specified objective	Question source	New	Question history	None	Cognitive level	Lower	10 CFR 55	43.2	Comments	None
Level	SRO																											
Tier	1																											
Group	1																											
KA # and Rating	295001 2.2.12 (3.7/4.1)																											
KA Statement	295001 Partial or Complete Loss of Forced Core Flow Circulation 2.2.12 Knowledge of surveillance procedures.																											
References	U/2 Tech Spec 3.4.1.2 (latest) U/2 Tech Spec 3.4.1.3 (latest)																											
Examinee References	None																											
Learning Objective	No specified objective																											
Question source	New																											
Question history	None																											
Cognitive level	Lower																											
10 CFR 55	43.2																											
Comments	None																											

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

82

ID: 1102864

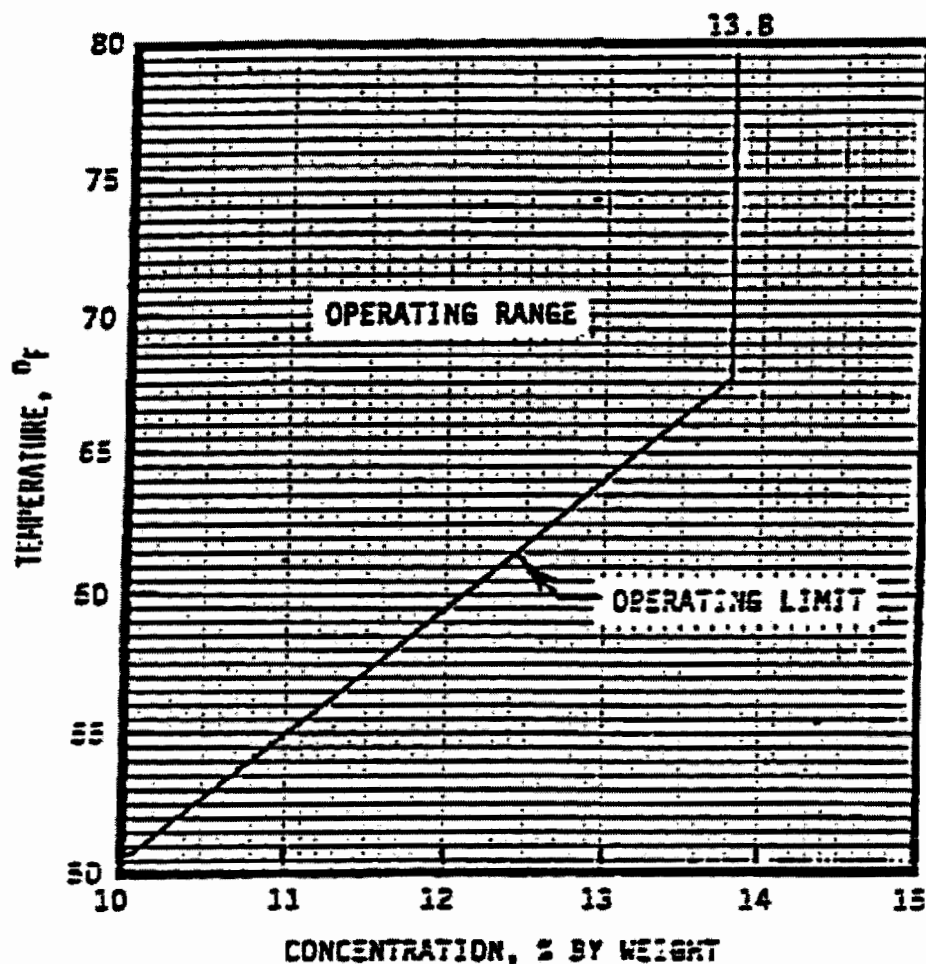
Points: 1.00

SRO

Unit 1 is in OPCON 1, with the following:

- SLC Tank level is 4000 gallons
- SLC Tank temperature is 78°F
- SLC Tank Sodium Pentaborate Concentration is 14.5% by weight

WHICH ONE of the following identifies the Tech Spec required action, if any?



- A. No action is required
- B. Raise SLC Tank temperature to 80°F within 8 hours
- C. Lower SLC Tank level to less than 3160 gallons within within 8 hours
- D. Reduce Sodium Pentaborate concentration to 13.5% by weight within 8 hours

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

Answer: D

Answer Explanation

Refer to Tech spec 3.1.5:

- SR 4.1.5.a.2 requires at least 3160 gallons in the tank
- Per Figure 3.1.5-1, the 78°F tank temperature is below the 80°F limit
- Per Figure 3.1.5-1, the 14.5% concentration EXCEEDS the 13.8% limit for a tank temperature of 78°F

'D' is correct: Reduce Sodium Pentaborate concentration to 13.5% by weight within 8 hours. This ACTION 'b'.

'A' is wrong: No action is required. Plausible to the examinee who cannot effectively use this LCO, especially with respect to interpreting Figure 3.1.5-1.

'B' is wrong: Raise SLC Tank temperature to 80°F within 8 hours. Plausible to the examinee who cannot effectively use this LCO, especially with respect to interpreting Figure 3.1.5-1.

'C' is wrong: Lower SLC Tank level to less than 3160 gallons within within 8 hours. Plausible to the examinee who cannot recall the 3160 gallon minimum tank volume.

Question 82 Info		
Question Type:	Multiple Choice	
Status:	Active	
Always select on test?	No	
Authorized for practice?	No	
Points:	1.00	
Time to Complete:	3	
Difficulty:	2.00	
System ID:	1102864	
User-Defined ID:	REV 00, 11/17/14	
Cross Reference Number:	LLOT0048.13	
Topic:	(SRO) Determine TS Action for inoperable SLC	
Num Field 1:	3.4	
Num Field 2:	4.7	
Text Field:	211000 2.2.40	
Comments:	<div> <div>Level</div> <div>SRO</div> <div>Tier</div> <div>2</div> <div>Group</div> <div>1</div> <div>KA # and Rating</div> <div>211000 2.2.40 (3.4/4.7)</div> <div>KA Statement</div> <div>211000 SLC</div> <div></div> <div>2.2.40 Ability to apply Technical Specifications for a system.</div> <div>References</div> <div>U/1 Tech Spec 3.1.5, latest</div> <div>Examinee</div> <div>None</div> <div>References</div> <div></div> <div>Learning</div> <div>LLOT0048.13</div> <div>Objective</div> <div></div> <div>Question source</div> <div>Bank 558226</div> <div>Question history</div> <div>None</div> <div>Cognitive level</div> <div>Higher</div> <div>10 CFR 55</div> <div>43.2</div> </div>	

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

	Comments	None
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EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

83

ID: 1102865

Points: 1.00

SRO

Unit 1 is in OPCON 1, with the following:

- 1A Drywell Chiller is operating
- 1B Drywell Chiller is in standby

The Instrument Air tubing to the 1A Chilled Water Outlet Valve, HV-87-102A, breaks at its connection to the valve positioner.

SRO is tasked with generating an Issue Report (IR).

Consider the requirements of OP-AA-108-115, 'Operability Determinations'.

WHICH ONE of the following identifies:

- 1) the maximum amount of time permitted for the CRS/SM to complete the initial Operability/Functionality determination, and
- 2) how the impacted SSCs should be categorized on the IR?
 - A. (1) 24 hours
(2) Nonfunctional
 - B. (1) 24 hours
(2) Inoperable
 - C. (1) 1 hour
(2) Nonfunctional
 - D. (1) 1 hour
(2) Inoperable

Answer: B

Answer Explanation

Refer to P&ID M-0087, Sheet 001, coordinate D/5, which shows that the HV-87-102A fails closed on loss of air, interrupting the chiller flow from the operating 1A Drywell Chiller and causing both the chiller and its chiller pump to trip on low flow. There is no auto-start function for the standby chiller (1B); therefore, operators must manually place that chiller in service. Until then, there is no DWCW being supplied to any of its loads, including the Drywell Unit Cooler coils, Recirc Pump Motor Coolers, and the Drywell Equipment Drain Sump Cooling Coil, any/all of which either directly or indirectly impact the OPERABILITY of certain Tech Spec SSCs, from the perspective of "support systems".

Refer to OP-AA-108-115, the following sections:

- 2.8 defines Functional/Functionality...SSCs that are NOT controlled by Tech Specs
- 2.14 defines OPERABLE/OPERABILITY...SSCs that are controlled by Tech Specs
- 4.1, specifically section 4.1.4...addresses documenting the determination result in the CAP; section 4.1.5...although the initial determination should be "made without delay", it SHALL be made within 24 hours

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

'B' is correct: (1) 24 hours; (2) Inoperable. Correct for the reasons described above.

'A' is wrong: (1) 24 hours; (2) Nonfunctional. Part (2) is very plausible to the examinee who recognizes that DWCV System, by itself, does not have a Tech Spec LCO, and forgets that the definition of OPERABLE, for those SSCs that are in Tech Specs, includes the need for "support systems" to be OPERABLE, as well.

'C' is wrong: (1) 1 hour; (2) Nonfunctional. Part (1) is plausible to the examinee who cannot recall the 24-hour requirement. Part (2) is plausible for the same reason as that for choice 'A'.

'D' is wrong: (1) 1 hour; (2) Inoperable. Part (1) is plausible for the same reason as for choice 'C'.

Question 83 Info		
Question Type:	Multiple Choice	
Status:	Active	
Always select on test?	No	
Authorized for practice?	No	
Points:	1.00	
Time to Complete:	5	
Difficulty:	3.50	
System ID:	1102865	
User-Defined ID:	REV 00, 11/17/14	
Cross Reference Number:	NONE	
Topic:	(SRO) Determine Operability/Functionality for Instrument Air failure	
Num Field 1:	4.6	
Num Field 2:	4.6	
Text Field:	300000 2.1.20	
Comments:	<div> <div>Level</div> <div>SRO</div> </div> <div> <div>Tier</div> <div>2</div> </div> <div> <div>Group</div> <div>1</div> </div> <div> <div>KA # and Rating</div> <div>300000 2.1.20 (4.6/4.6)</div> </div> <div> <div>KA Statement</div> <div>300000 Instrument Air 2.1.20 Ability to interpret and execute procedure steps</div> </div> <div> <div>References</div> <div>P&ID M-0087, Sheet 001, Rev.34 U/1 Tech Spec Definition 1.25 (latest) OP-AA-108-115, Rev.13</div> </div> <div> <div>Examinee</div> <div>None</div> </div> <div> <div>References</div> <div></div> </div> <div> <div>Learning</div> <div>No specified objective</div> </div> <div> <div>Objective</div> <div></div> </div> <div> <div>Question source</div> <div>New**</div> </div> <div> <div>Question history</div> <div>None</div> </div> <div> <div>Cognitive level</div> <div>Higher</div> </div> <div> <div>10 CFR 55</div> <div>43.2, 43.5</div> </div>	

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

	<p>Comments</p> <p>**This question is very similar to Question #87 on the CERT Exam for this class; it focuses on the same application of Operability/Functionality, and its answer is the same as for that on the CERT Exam. However, the stem conditions for the question here are significantly different and quite a bit more discriminating (higher Level of Difficulty). The CERT Exam item simply considers a malfunctioning SRM Channel, making Part (2) of the answer fairly easy, while this item involves the malfunction of what the Candidate must recognize as a "support system" and recognize that, as a support system, it is a component of OPERABILITY for those Tech Spec systems/equipment impacted by its loss. Exam Author conclusion: There is NO overlap between this question and the one on the CERT Exam.</p>
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EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

84

ID: 1102904

Points: 1.00

SRO

Unit 1 is operating at 100% power.

RWCU trips and isolates due to a Filter/Demin controller malfunction.

WHICH ONE of the describes the Tech Spec or TRM required action, if any?

- A. No Tech Spec or TRM required action
- B. Direct Chemistry to sample/measure reactor coolant conductivity once every 4 hours
- C. Direct Chemistry to sample/measure reactor coolant conductivity once every 24 hours
- D. Verify both Reactor Water Sample Valves (HV-043-1F019(020)) are open within 2 hours

Answer: B

Answer Explanation

RWCU doesn't impact Tech Specs, directly or indirectly. However, its loss does impact TRM 3.4.4, Reactor Coolant System Chemistry. Specifically, SR 4.4.4.1.c requires a continuous in-line conductivity measurement; if that is not available, then reactor coolant conductivity must be sampled/measured every 4 hours, while in OPCI 1, 2, 3 (every 24 hours in OPCI 4, 5). Reactor coolant water conductivity is continuously measured at three points in the RWCU system...at the Outlet of the NRHX (also known as the Demin Inlet) and at the Outlet of both RWCU Filter/Demins...and is displayed on two MCR recorders (CR-1R601 and 1R603) at panel 10C602 (refer to alarm response card ARC-MCR-112, G4 to validate this).

Recirc Loop 'B' includes two, normally-open, inboard/outboard Reactor Water Sample Valves (HV-043-1F019 and 1F020) that provide a portion of that Loop's water to a Process Sampling Station (refer to P&ID M-0043, Sheet 1, coordinates G/2-4 to validate this). It is at that Sampling Station where personnel can take a grab sample of reactor coolant.

'B' is correct: Direct Chemistry to sample/measure reactor coolant conductivity once every 4 hours. Correct for the reasons described above.

'A' is wrong: No Tech Spec or TRM required action. Plausible to the inexperienced operator/examinee who fails to recognize the connection between an in-service RWCU system and the continuous in-line conductivity monitor.

'C' is wrong: Direct Chemistry to sample/measure reactor coolant conductivity once every 24 hours. This would be correct were the plant in OPCI 4 or 5 (as earlier discussed). Plausible to examinee who fails to recall the 4-hour requirement of TRM SR 4.4.4.1.c.1.

'D' is wrong: Verify both Reactor Water Sample Valves (HV-043-1F019(020)) are open within 2 hours. Very plausible to the examinee who believes that this sample line also includes a continuous in-line conductivity monitor.

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

Question 84 Info		
Question Type:	Multiple Choice	
Status:	Active	
Always select on test?	No	
Authorized for practice?	No	
Points:	1.00	
Time to Complete:	3	
Difficulty:	2.50	
System ID:	1102904	
User-Defined ID:	REV 00, 11/17/14	
Cross Reference Number:	LGSOPS0044.IL11	
Topic:	(SRO) RWCU Isolation - Determine Tech / TRM Action	
Num Field 1:	3.6	
Num Field 2:	4.5	
Text Field:	204000 2.2.38	
Comments:	<p>Level SRO</p> <p>Tier 2</p> <p>Group 2</p> <p>KA # and Rating 204000 2.2.38 (3.6/4.5)**</p> <p>KA Statement 204000 RWCU</p> <p>2.2.38 Knowledge of conditions and limitations in the facility license</p> <p>References U/1 TRM 3.4.4, latest</p> <p>P&ID M-0043, Sheet 1, Rev.51</p> <p>ARC-MCR-112, G4, Rev.2</p> <p>Examinee None</p> <p>References</p> <p>Learning LGSOPS0044.IL11</p> <p>Objective</p> <p>Question source New</p> <p>Question history None</p> <p>Cognitive level Lower</p> <p>10 CFR 55 43.1, 43.2</p> <p>Comments **Justification for KA match: There is no way to connect RWCU with the Facility Operating License (FOL); however, the facility Tech Specs are part of that FOL (in fact, just an Ammendment to the FOL). Therefore, a question framed as it would be were the selected KA 2.2.40, instead, is also an appropriate match with KA 2.2.38.</p>	

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

85

ID: 1102906

Points: 1.00

SRO

Unit 1 plant conditions:

- Fuel Shuffle Part 2 is in progress
- A grappled fuel bundle is hanging above its "move to" location in the core
- The FHD and Spotter perform concurrent verification of location and orientation
- The Unit RO is informed that the bundle is going into the core

With the bundle fully seated and still grappled, the spotter reports that the bundle location is not correct.

WHICH ONE of the following describes the FH-105 (Core Component Movement - Core Transfers) requirement for correcting this fuel bundle location problem?

- A. May be immediately corrected with concurrent verification steps re-performed on the same CCTAS
- B. May be immediately corrected provided concurrent verification on the same CCTAS is performed by a different set of individuals
- C. Shall NOT be corrected until the FHD authorizes a pen-and-ink change to the CCTAS
- D. Shall NOT be corrected until the concurrent verification failure is reported to Shift Management, RSS Management and Reactor Engineering

Answer: D

Answer Explanation

'D' is correct: Shall NOT be corrected until the concurrent verification failure is reported to Shift Management, RSS Management and Reactor Engineering. Taken directly from FH-105, Step 8.4.1.

'A' is wrong: May be immediately corrected with concurrent verification steps re-performed on the same CCTAS. This would be a violation of FH-105. Plausible to the examinee who believes the bundle should be placed in its correct location prior to suspending fuel moves.

'B' is wrong: May be immediately corrected provided concurrent verification on the same CCTAS is performed by a different set of individuals. Again, this violates FH-105. Plausible to the examinee who believes that placing the bundle in the correct location is the correct action and that it's acceptable to re-perform the move with two different individuals.

'C' is wrong: Shall NOT be corrected until the FHD authorizes a pen-and-ink change to the CCTAS. This choice is taken from FH-105, Step 8.5, which states..."IF it becomes necessary to deviate from the Move Sheet, THEN the Fuel Handling Director shall halt core component moves prior to performing the step requiring deviation AND initiate a revision to the Move Sheet NF-AA-309". NF-AA-309 (SNM and Core Component Move Sheet Development) requires Reactor Engineering approval of move sheet changes. This choice is plausible to the examinee who believes the Fuel Handling Director can approve a pen and ink change to a move sheet without RE approval.

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

Question 85 Info																														
Question Type:	Multiple Choice																													
Status:	Active																													
Always select on test?	No																													
Authorized for practice?	No																													
Points:	1.00																													
Time to Complete:	3																													
Difficulty:	2.50																													
System ID:	1102906																													
User-Defined ID:	REV 00, 11/17/14																													
Cross Reference Number:	LLOT0760																													
Topic:	(SRO) Recall FH-105 requirements for correcting a fuel bundle mis-located in the core																													
Num Field 1:	2.5																													
Num Field 2:	3.4																													
Text Field:	2.1.42																													
Comments:	<table><tr><td>Level</td><td>SRO</td></tr><tr><td>Tier</td><td>3</td></tr><tr><td>Group</td><td>N/A</td></tr><tr><td>KA # and Rating</td><td>2.1.42 (2.5/3.4)</td></tr><tr><td>KA Statement</td><td>2.1.42 Knowledge of new and spent fuel movement procedures.</td></tr><tr><td>References</td><td>FH-105, Rev.47</td></tr><tr><td>Examinee</td><td>None</td></tr><tr><td>References</td><td></td></tr><tr><td>Learning Objective</td><td>LLOT0760, no specified objective</td></tr><tr><td>Question source</td><td>Bank 985947</td></tr><tr><td>Question history</td><td>None</td></tr><tr><td>Cognitive level</td><td>Higher</td></tr><tr><td>10 CFR 55</td><td>43.7</td></tr><tr><td>Comments</td><td>None</td></tr></table>		Level	SRO	Tier	3	Group	N/A	KA # and Rating	2.1.42 (2.5/3.4)	KA Statement	2.1.42 Knowledge of new and spent fuel movement procedures.	References	FH-105, Rev.47	Examinee	None	References		Learning Objective	LLOT0760, no specified objective	Question source	Bank 985947	Question history	None	Cognitive level	Higher	10 CFR 55	43.7	Comments	None
Level	SRO																													
Tier	3																													
Group	N/A																													
KA # and Rating	2.1.42 (2.5/3.4)																													
KA Statement	2.1.42 Knowledge of new and spent fuel movement procedures.																													
References	FH-105, Rev.47																													
Examinee	None																													
References																														
Learning Objective	LLOT0760, no specified objective																													
Question source	Bank 985947																													
Question history	None																													
Cognitive level	Higher																													
10 CFR 55	43.7																													
Comments	None																													

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

86

ID: 1104204

Points: 1.00

SRO

Unit 1 is operating at 100% power.

Operators have just completed ST-6-001-761-1, "Main Turbine Bypass Valve (BPV) Exercising".

The ST indicates that 3 BPVs will not open should a main turbine trip occur.

CRS declares the 3 BPVs inoperable.

WHICH ONE of the following describes the impact on continued plant operation?

- A. May continue operating at 100% power with the same MCPR limits
- B. May continue operating at 100% power but with a more limiting MCPR value
- C. May continue operating only at power levels above 90% or below 25%; no Thermal limits apply
- D. May continue operating only at power levels below 25%; no Thermal limits apply

Answer: B

Answer Explanation

Refer to U/1 TS 3.7.8 (Main Turbine Bypass System). The LCO statement points to the COLR to determine the minimum number of BPVs required to be OPERABLE. Refer to the U/1 COLR, Section 7.0, where we find that a minimum of 7 valves are required. Stem indicates that only 6 of the 9 BPVs are OPERABLE; therefore, an LCO entry is required. The sole ACTION (of TS 3.7.8) is...With the main turbine bypass system inoperable, restore the system to OPERABLE status within 1 hour or take the ACTION required by Specification 3.2.3.c. Refer to TS 3.2.3 (MCPR), where ACTION 'c' states...With the main turbine bypass system inoperable per Specification 3.7.8, operation may continue provided that, within 1 hour, MCPR is determined to be greater than or equal to the rated MCPR limit as a function of the average scram time (shown in the CORE OPERATING LIMITS REPORT) main turbine bypass valve inoperable curve, adjusted by the MCPR(P) and MCPR(F) factors as shown in the CORE OPERATING LIMITS REPORT.

'B' is correct: May continue operating at 100% power but with a more limiting MCPR value.
Correct for the reasons described above.

'A' is wrong: May continue operating at 100% power with the same MCPR limits. Plausible to the examinee who either does not recall that the COLR requires at least 7 BPVs to be OPERABLE, or who does, but does not recognize that a more limiting MCPR limit applies due to the inoperable turbine bypass system.

'C' is wrong: May continue operating only at power levels above 90% or below 25%; no Thermal limits apply. This choice "suggests" the idea of OT-102 (High Reactor Pressure), Attachment 3, which reminds operators that MCPR in unanalyzed at power levels between 25% and 90% with only a single functioning Pressure Regulator. Plausible to the examinee who confuses the two very different situations (inoperable Regulator versus inoperable turbine bypass system).

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

'D' is wrong: May continue operating only at power levels below 25%; no Thermal limits apply. Plausible to the examinee does not recall that there is a specific MCPR LCO Action (3.2.3.c) that accounts for an inoperable turbine bypass system. This examinee recognizes that we are below the COLR minimum for operable BPVs and the fact that MCPR is somehow impacted, but thinks the only solution to reduce power to below 25% so that none of the Thermal Limits (MCPR, APLHGR, LHGR) apply.

Question 86 Info		
Question Type:	Multiple Choice	
Status:	Active	
Always select on test?	No	
Authorized for practice?	No	
Points:	1.00	
Time to Complete:	6	
Difficulty:	2.50	
System ID:	1104204	
User-Defined ID:	REV 00, 11/17/14	
Cross Reference Number:		
Topic:	(SRO) Determine Impact of Inop BPVs on Continued Plant Operation	
Num Field 1:	3.1	
Num Field 2:	3.1	
Text Field:	295005 AA2.03	
Comments:	<div> <div>Level</div> <div>SRO</div> <div>Tier</div> <div>1</div> <div>Group</div> <div>1</div> <div>KA # and Rating</div> <div>295005 AA2.03 (3.1/3.1)</div> <div>KA Statement</div> <div>295005 Main Turbine Generator Trip Ability to determine and/or interpret the following as they apply to MAIN TURBINE GENERATOR TRIP: AA2.03 Turbine valve position</div> <div>References</div> <div>U/1 Tech Spec 2.1.2 (latest) U/1 Tech Spec 3.2.3 (latest) U/1 Tech Spec 3.7.8 (latest) U/1 COLR, Rev.11 OT-102, Rev.22</div> <div>Examinee</div> <div>None</div> <div>References</div> <div></div> <div>Learning</div> <div>No specified objective</div> <div>Objective</div> <div></div> <div>Question source</div> <div>New</div> <div>Question history</div> <div>None</div> <div>Cognitive level</div> <div>Higher</div> <div>10 CFR 55</div> <div>43.2</div> <div>Comments</div> <div>None</div> </div>	

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

87

ID: 1104205

Points: 1.00

SRO

Unit 1 is operating at 100% power.

Due to a degrading main condenser vacuum, operators insert a manual scram.

Current conditions:

- Mode Switch is in SHUTDOWN
- Two rods remain FULL OUT
- SRV 1E inadvertently opened and reclosed after fuses were pulled
- RPV level is +10", up slow
- Suppression Pool temperature is 112°F, up slow
- All "APRM DOWNSCALE" lights are lit

WHICH ONE of the following identifies the **WIDEST** allowable RPV level band?

- A. -161" to +12.5", per T-101 (RPV Control)
- B. -186" to +54", per T-117 (Level/Power Control)
- C. -186" to +10", per T-117 (Level/Power Control)
- D. +12.5" to +54", per T-101 (RPV Control)

Answer: B

Answer Explanation

On the scram, operators enter T-101 (RPV Control) due to RPV level (+12.5"). Upon discovery of "two rods remaining FULL OUT", they enter T-117 (Level/Power Control) and execute the LQ leg...with reactor power below 4% and RPV level not intentionally lowered, they arrive at Step LQ-16. The RPV level band at LQ-16 is -186" to +54".

'B' is correct: -186" to +54", per T-117 (Level/Power Control). Correct for the reasons described above.

'A' is wrong: -186" to +10", per T-117 (Level/Power Control). Plausible if the examinee determines that ATWS conditions exist based on indications of 2 rods remaining full out, and reactor power unknown. Based on that, the examinee also determines that RPV level needs to be deliberately lowered to -50" and as a result step LQ-15 states that if RPV level was deliberately lowered then RPV level needs to be maintained between -186" to level to which it was lowered from (+10").

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

'C' is wrong: +12.5" to +54", per T-101 (RPV Control). Plausible based on RPV level below +12.5", T-101, RPV Control is entered, and ATWS condition exists but reactor power is less than 4% power due to indications that APRM downscale lights are lit. T-101, Step RC/L-2 ATWS bases states that if operators have positive confirmation that the reactor is, and will remain, shutdown under all conditions without boron, an ATWS is NOT in progress. This determination is best obtained by determining that no control rod is withdrawn beyond the maximum subcritical banked withdrawal position (MSBWP, position 02). However, other criteria can also be used to demonstrate that the reactor will remain shutdown under all conditions, without boron. Also, Caution for RC/Q states that APRM downscale may be used to ensure reactor power is less than 4%. Therefore, RC/L-4 directs operators to restore and maintain RPV level between +12.5" and +54" when there is an ATWS condition with reactor power less than 4%.

'D' is wrong: -161" to +12.5", per T-101 (RPV Control). Plausible if the examinee correctly determines that no ATWS conditions exist based on APRM Downscale lights, however, the examinee may determine that due to the RPV level below +12.5", step RC/L-5 applies, which states that if RPV level cannot be restored and maintained above +12.5" then maintain RPV level above -161". Based on that the maximum level band changes to +12.5" to -161".

Question 87 Info		
Question Type:	Multiple Choice	
Status:	Active	
Always select on test?	No	
Authorized for practice?	No	
Points:	1.00	
Time to Complete:	5	
Difficulty:	2.50	
System ID:	1104205	
User-Defined ID:	REV 00, 11/17/14	
Cross Reference Number:	LLOT1560	
Topic:	(SRO) Scram/ATWS - Determine Applicable RPV Water Level Band	
Num Field 1:	4.2	
Num Field 2:	4.2	
Text Field:	295006 AA2.03	
Comments:	<div> <div>Level</div> <div>SRO</div> <div>Tier</div> <div>1</div> <div>Group</div> <div>1</div> <div>KA # and Rating</div> <div>295006 AA2.03 (4.0/4.2)</div> <div>KA Statement</div> <div>295006 SCRAM</div> <div>Ability to determine and/or interpret the following as they apply to SCRAM: AA2.03</div> <div>Reactor water level</div> <div>References</div> <div>T-101, Rev.21</div> <div>T-117, Rev.17</div> <div>Examinee</div> <div>None</div> <div>References</div> <div></div> <div>Learning</div> <div>LLOT1560</div> <div>Objective</div> <div></div> <div>Question source</div> <div>LGS 2012 ILT NRC Exam, Question #77</div> <div>Question history</div> <div>LGS 2012 ILT NRC Exam, Question #77</div> <div>Cognitive level</div> <div>Higher</div> <div>10 CFR 55</div> <div>43.5</div> <div>Comments</div> <div>None</div> </div>	

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

88

ID: 1104206

Points: 1.00

SRO

Plant conditions:

- Reactor level is 35", steady
- Reactor pressure is 500 psig
- Drywell pressure is 12 psig
- Drywell temperature is 275°F
- Suppression Pool pressure is 10 psig
- Suppression Pool temperature is 115°F
- Suppression Pool level is 23.5 feet

WHICH ONE of the following actions should be given the **HIGHEST** priority?

(Assume that none of the suggested actions has yet been performed.)

- A. Spray the Drywell per T-225
- B. Spray the Suppression Pool per T-225
- C. Lower Suppression Pool level per T-102
- D. Perform Emergency Blowdown per T-112

Answer: B

Answer Explanation

The SRO (ILT) examinee is expected to answer this question from memory by recognizing/recalling/interpreting certain parameter values, such as: 1) the combination of a 23.5 ft supp pool level with a 115°F supp pool temperature is ALWAYS acceptable when evaluated against any of the T-102 Curves; 2) a supp pool level of 23.5', although higher than normal, does not yet require level to be lowered; 3) a 10 psig supp pool pressure is no where near being a threat to PCPL; 4) a 12 psig drywell pressure with a 275°F drywell temperature is well on the SAFE side of the DWSIL curve; 5) none of the given parameter values, in and of themselves, are near an Emergency Blowdown limit. The examinee is also expected to recall that although the supp pool should have been sprayed before reaching 7.5 psig (see T-102, PC/P leg), that action is, nonetheless, still to be performed BEFORE proceeding thru the STOP sign of step PC/P-7 (i.e., BEFORE spraying the DW). Therefore, the required action with the HIGHEST priority (given the answer choices, none of which has yet been performed) must be to spray the supp pool (as directed by T-102, step PC/P-5, and performed using T-225).

'B' is correct: Spray the Suppression Pool per T-225. Correct for the reasons described above.

'A' is wrong: Spray the Drywell per T-225. Plausible for the reasons described above. This examinee forgets that the supp pool is to be sprayed BEFORE the drywell.

'C' is wrong: Lower Suppression Pool level per T-102. Plausible for the reasons described above. This examinee is distracted by the much-higher-than-normal supp pool level.

'D' is wrong: Perform Emergency Blowdown per T-112. Plausible to the examinee who cannot effectively interpret any of the critical stem conditions information and, so, defaults to believing that an Emergency Blowdown is a priority.

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

Question 88 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	4
Difficulty:	2.50
System ID:	1104206
User-Defined ID:	REV 00, 11/17/14
Cross Reference Number:	LLOT1560.6
Topic:	(SRO) T-102 - Determine Required Action Given PC Parameters
Num Field 1:	3.9
Num Field 2:	4.2
Text Field:	295010 2.1.25
Comments:	<div> <div>Level</div> <div>SRO</div> </div> <div> <div>Tier</div> <div>1</div> </div> <div> <div>Group</div> <div>2</div> </div> <div> <div>KA # and Rating</div> <div>295010 2.1.25* (3.9/4.2)</div> </div> <div> <div>KA Statement</div> <div>295010 High Drywell Pressure 2.1.25 Ability to interpret reference materials, such as graphs, curves, tables,etc.</div> </div> <div> <div>References</div> <div>T-102, Rev.24 T-225 U/1, Rev.22</div> </div> <div> <div>Examinee</div> <div>None</div> </div> <div> <div>References</div> <div></div> </div> <div> <div>Learning</div> <div>LLOT1560.6</div> </div> <div> <div>Objective</div> <div></div> </div> <div> <div>Question source</div> <div>Bank 554360</div> </div> <div> <div>Question history</div> <div>None</div> </div> <div> <div>Cognitive level</div> <div>Higher</div> </div> <div> <div>10 CFR 55</div> <div>43.5</div> </div> <div> <div>Comments</div> <div>*Justification for KA match: Although the correct involves "spraying the supp pool" (rather than the drywell), the T-102 action to spray the pool is a part of the same mitigation strategy as is spraying the drywell; in fact, both are part of executing the PC/P (Primary Containment Pressure) leg of T-102.</div> </div>

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

89

ID: 1104267

Points: 1.00

SRO

Unit 1 is in a SITE AREA EMERGENCY, with the following:

- Complete loss of all offsite power and LOCA
- The only Unit 1 4KV Safeguard Buses being powered are D11 and D12
- RPV water level is -165", steady
- Drywell radiation monitor is reading 30 R/hr
- Actual offsite dose is 200 mRem TEDE and 300 mRem CDE Thyroid

WHICH ONE of the following will, **by itself**, escalate Unit 1 to a GENERAL EMERGENCY?

- A. Loss of D11 DG or D12 DG
- B. Actual offsite dose > 1000 mRem TEDE
- C. Drywell radiation monitor reading 95 R/hr
- D. RPV water drops to -182", steady

Answer: B

Answer Explanation

Refer to EP-AA-1008, LGS EAL "Hot Matrix".

'B' is correct: Actual offsite dose > 1000 mRem TEDE. Per EAL RG1, Threshold Criteria #2, an actual offsite dose of > 1000 TEDE warrants a GENERAL EMERGENCY.

'A' is wrong: Loss of D11 DG or D12 DG. Given the stem conditions, with respect to "Loss of AC Power", Unit 1 is only at the UNUSUAL EVENT level (per EAL MU1). Were either the D11 DG or D12 DG to be lost, the resulting "Loss of AC Power" emergency classification would be an ALERT (per MA1). Plausible to the inexperienced SRO Candidate who recalls only that a single remaining 4KV bus (which would be the result of losing either of the two DGs) places the Unit one power source away from a "Station Blackout" situation; often, such Candidates wrongly conclude that this alone is reason to declare a G.E.

'C' is wrong: Drywell radiation monitor reading 95 R/hr. A 95 R/hr drywell radiation level is still well below the 190 R/hr threshold for a "loss of the Fuel Clad" (per the "Fuel Clad" portion of the Fission Product Barrier Matrix; see EAL FG1). Plausible to the inexperienced SRO Candidate who incorrectly recalls the ">190 R/hr" threshold value, associated with the "loss of Fuel Clad", as >90 R/hr, instead.

'D' is wrong: RPV water drops to -182", steady. -182" (steady) is still above the -186" threshold value of the "loss of Fuel Clad" portion of the FP Barrier Matrix. Plausible, again, to most inexperienced SRO Candidates.

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

Question 89 Info		
Question Type:	Multiple Choice	
Status:	Active	
Always select on test?	No	
Authorized for practice?	No	
Points:	1.00	
Time to Complete:	5	
Difficulty:	3.00	
System ID:	1104267	
User-Defined ID:	REV00, 11/17/14	
Cross Reference Number:		
Topic:	(SRO) Recognize degrading plant condition warranting declaration of a General Emergency	
Num Field 1:	2.9	
Num Field 2:	4.2	
Text Field:	295017 AA2.01	
Comments:	<p>Level SRO</p> <p>Tier 1</p> <p>Group 2</p> <p>KA # and Rating 295017 AA2.01 (2.9/4.2)</p> <p>KA Statement 295017 High Offsite Release Rate**</p> <p>Ability to determine and/or interpret the following as they apply to HIGH OFF-SITE RELEASE RATE: AA2.01 †Off-site release rate</p> <p>References EP-AA-1008 Hot Matrix, Rev.26</p> <p>Examinee None</p> <p>References</p> <p>Learning Objective No specified objective</p> <p>Question source New</p> <p>Question history None</p> <p>Cognitive level Lower</p> <p>10 CFR 55 43.5</p> <p>Comments **Justification for KA match: The description of the RG1 classification clearly associates a total dose (in this case, >1000 mR TEDE or 5000 mR Thyroid CEDE) projected to be received for the <u>duration of a release</u>. In other words, it relates a dose to a time factor. As such, although the RG1 units of measure are dose rather than dose rate, the intent of the 295017 KA is satisfied by the an application to this EAL.</p>	

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

90

ID: 1104304

Points: 1.00

SRO

Unit 1 is operating at 100% power.

Operators determine the following:

- AGAFs are reading 1.03 on APRMs 1 and 3
- The AGAFs will not respond to adjustment

WHICH ONE of the following describes the Tech Spec required action?

- A. Be in STARTUP within 12 hours
- B. Be in STARTUP within 18 hours
- C. Insert a half-scam on either RPS 'A' or 'B' within 6 hours
- D. Place APRM channels 1 and 3 in a tripped condition within 12 hours

Answer: B

Answer Explanation

Refer to U/1 Tech Spec 3.3.1 (RPS), Table 4.3.3.1-1, Functional Units 2.b and 2.c, as well as Note (d). Also refer to Table 3.3.1-1, Functional Units 2.b and 2.c, as well as Note (m). A review of these Tables and Notes reveals the following:

- All 4 APRM channels (1, 2, 3, 4) input to both RPS Trip Systems (A and B)
- A "Minimum" of 3 of the channels must be OPERABLE for each of the two Trip Systems
- The "bad" AGAF (see Note (d)) affects Functional Units 2.b and 2.c

Given the stem conditions, we conclude the following:

- Only two APRM channels (2 and 4) remain OPERABLE, for each Trip System, for each of the two Functional Units (2.b, 2.c)
- Thus, each Trip System has one OPERABLE channel less than the three required

A review of ACTION 'a' and the (*) Note at the bottom of the page reveals the following required action:

- Within 1 hour, verify there is at least two OPERABLE channels in each Trip System
- Because we have the two OPERABLE channels, nothing further is required by ACTION 'a'

However, ACTION 'b', and the (**) Note at the bottom of the page, requires the following:

- Within 12 hours, APRMs 1 and 3 must be placed in a tripped condition
- If we were to do this, a full scam would occur

Fortunately, ACTION 'd' provides for an option in lieu of intentionally scrambling the plant:

- Within 12 hours (action time associated with ACTION 'b'), initiate ACTION "4" (as noted for Functional Units 2.b/2.c on Table 3.3.1-1)

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

Regarding ACTION 4...

- By itself, Action 4 would require the Mode Switch to be in STARTUP within 6 hours
- However, as already discussed above, we do not have to initiate that ACTION until the expiration of the 12 hour action time permitted by Action 'b'

From all of this, we find that the "Tech Spec required action" for this event is as follows:

- Be in STARTUP within 18 hours (i.e., the 12 hours of Action 'b' + the 6 hours of Action 4)

'B' is correct: Be in STARTUP within 18 hours. Correct for the reasons described above.

'A' is wrong: Be in STARTUP within 12 hours. Plausible to the examinee who does know how to analyze the two inoperable APRMS (as we've done above), but who fails to recognize that ACTION 'd' extends the Action '4' time to 18 hours, or who simply fails to recognize the "initiate" term used in the wording of ACTION 'd' (i.e., he/she wrongly substitutes the 12 hour time of ACTION 'b' for the 6 hours of ACTION 4).

'C' is wrong: Insert a half-scam on either RPS 'A' or 'B' within 6 hours. This choice suggests ACTION 'c'. It's plausible to the examinee who fails to recognize that the (**) Note excludes Functional Units 2.b and 2.c from ACTION 'c'.

'D' is wrong: Place APRM channels 1 and 3 in a tripped condition within 12 hours. This choice suggests that we can in fact perform ACTION 'b' without causing a full scram. This is very plausible to the examinee who does not fully understand how the "Two-out-of-Four" VOTER arrangement works for the Power Range Neutron Monitoring System. As such, that examinee believes that Channels 1 and 3 follow the "usual" convention of being associated only with RPS Trip System 'A' (where, for example, Channels 2 and 4 would similarly be associated with RPS Trip System 'B'). If that were true, then simply inserting a half-scam (by tripping the APRM channels) would be a logical action to take.

Question 90 Info		
Question Type:	Multiple Choice	
Status:	Active	
Always select on test?	No	
Authorized for practice?	No	
Points:	1.00	
Time to Complete:	6	
Difficulty:	3.00	
System ID:	1104304	
User-Defined ID:	REV 00, 11/17/14	
Cross Reference Number:	LLOT0071.12	
Topic:	(SRO) Determine Tech Spec Action for two inoperable APRMs	
Num Field 1:	4.0	
Num Field 2:	4.7	
Text Field:	212000 2.2.22	
Comments:	Level	SRO
	Tier	2
	Group	1
	KA # and Rating	212000 2.2.22 (4.0/4.7)
	KA Statement	212000 RPS
		2.2.22 Knowledge of limiting conditions for operations and safety limits.
	References	U/1 Tech Spec 3.3.1

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

	Examinee	U/1 Tech Spec 3.3.1 (EXCLUDING Table
	References	3.3.1-2)
	Learning	LLOT0071.12
	Objective	
	Question source	New
	Question history	None
	Cognitive level	Higher
	10 CFR 55	43.2
	Comments	None

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

91

ID: 1104380

Points: 1.00

SRO

Unit 1 is operating at 100% power when the following occurs:

- 'A' and 'C' Narrow Range Level Indicators (at 10C603) simultaneously fail hard downscale
- The failures are due to the associated level transmitter outputs failing to 0 mA

WHICH ONE of the following describes:

- (1) the response of reactor power, and
- (2) the Tech Spec implication?

- A.
 - (1) Remains unchanged
 - (2) Must restore either the 'A' or 'C' level instrument to OPERABLE within 72 hours
- B.
 - (1) Lowers to about 65%
 - (2) Must restore either the 'A' or 'C' level instrument to OPERABLE within 72 hours
- C.
 - (1) Lowers to about 65%
 - (2) Because the instruments have failed downscale, the required Tech Spec action is already satisfied
- D.
 - (1) Remains unchanged
 - (2) Because the instruments have failed downscale, the required Tech Spec action is already satisfied

Answer: B

Answer Explanation

Refer to S06.1.H U/1, Responding to Alarms at the FWLCS Operator Station, Attachment 1 ALARM LIST, page 8 of 27, "Signal Identity" 1XX-FW300.ILE. A review of the "Automatic Actions" for this item shows that the simultaneous failure of two RPV level transmitters (such as the two identified in the the question stem) results in an automatic Recirc Pump runback to 28% speed due to a "sensed" RPV level of < 12.5". SRO examinee is expected to recognize that reactor power will lower and stabilize at about 65% as a consequence of the runback.

The examinee is expected to recognize that these two failed RPV level indicators (LI-42-1R606A and C) input only to FWLCS; they are not used by RPS. As such, the "RPS Instrumentation" Tech Spec (3.3.1) does not apply, but the "Feedwater/Main Turbine Trip Actuation Instrumentation" Tech Spec (3.3.9) does apply. Note - the two failed level instruments are among the four (total), including the 'B' and 'D' instruments, that make up the main turbine and reactor feed pump turbine trip logic when RPV level rises to +54". Per Tech Spec Table 3.3.9-1, all four of the instruments are required to be OPERABLE. The two failed (inoperable) instruments make ACTION 'c', therefore, the required action. That ACTION translates to the following: "Restore either the 'A' or 'C' level instrument to OPERABLE within 72 hours.

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

Suppose these particular two instruments ('A' and 'C') were, instead, among the four (total) instruments used by RPS (for the RPV Low Level +12.5" scram function). The RPS Trip System association with its Narrow Range level instruments is as follows: (A or C) AND (B or D). In that case, only RPS Trip System 'A' would actuate in response to the "sensed" RPV low level; i.e., an RPS 'A' half-scram would result. Refer to RPS Tech Spec 3.3.1, where Table 3.3.1-1, Functional Unit 4 shows that both level instruments are required to be OPERABLE for each Trip System. In this case, ACTION 'b' would apply; however, with RPS 'A' already "tripped" (i.e., the half-scram), that ACTION is already completed and no additional ACTION is required by the LCO.

'B' is correct: (1) Lowers to about 65%; (2) Restore either the 'A' or 'C' level instrument to OPERABLE within 72 hours. Correct for the reasons described above.

'A' is wrong: (1) Remains unchanged; (2) Restore either the 'A' or 'C' level instrument to OPERABLE within 72 hours. Part (1) is very plausible because the examinee is likely not to recognize/recall the association between the level instrument downscale failure and the resulting Recirc Pump 28% Runback.

'C' is wrong: (1) Lowers to about 65%; (2) Because the instruments have failed downscale, the required Tech Spec action is already satisfied. Part (2) is plausible to the examinee who believes that these two level instruments are used by RPS (as discussed above).

'D' is wrong: (1) Remains unchanged; (2) Because the instruments have failed downscale, the required Tech Spec action is already satisfied. Plausible for the same reasons as that for choices 'A' and 'C'.

Question 91 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	5
Difficulty:	3.00
System ID:	1104380
User-Defined ID:	REV 00, 11/17/14
Cross Reference Number:	LLOT0540,16
Topic:	(SRO) FWLCS LT failures - Predict Plant Response and Tech Spec Implication
Num Field 1:	3.6
Num Field 2:	3.7
Text Field:	259002 A2.03
Comments:	Level SRO Tier 2 Group 1 KA # and Rating 259002 A2.03 (3.6/3.7)

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

	KA Statement	259002 Reactor Water Level Control Ability to (a) predict the impacts of the following on the REACTOR WATER LEVEL CONTROL SYSTEM ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: A2.03 Loss of reactor water level input
	References	S06.1.H U/1, Rev.14 U/1 Tech Spec 3.3.1 (latest) U/1 Tech Spec 3.3.9 (latest)
	Examinee References	None
	Learning Objective	LLOT0540, 16
	Question source	New
	Question history	None
	Cognitive level	Higher
	10 CFR 55	41.5, 43.2
	Comments	None

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

92

ID: 1104381

Points: 1.00

Unit 1 is operating at 100% power, with the following:

- RCIC system is being operated in Full Flow Test
- RCIC flow controller is in AUTO

The output of the RCIC pump discharge flow transmitter to the RCIC flow controller fails UPSCALE.

CRS declares RCIC inoperable.

WHICH ONE of the following describes:

- (1) the RCIC system response to the failure, and
(2) the Tech Spec time allowed for restoring RCIC to OPERABLE?

- A. (1) Turbine trips on overspeed
(2) 14 days, provided HPCI is OPERABLE
- B. (1) Turbine speed lowers
(2) 14 days, provided HPCI and ADS are both OPERABLE
- C. (1) Turbine trips on overspeed
(2) 14 days, provided HPCI and ADS are both OPERABLE
- D. (1) Turbine speed lowers
(2) 14 days, provided HPCI is OPERABLE

Answer: D

Answer Explanation

The failed UPSCALE flow transmitter causes the Flow Controller to "sense" excessively high flow; therefore, the controller throttles closed on the governor valve, lowering the turbine speed.

Per Tech Spec 3.7.3 (RCIC), ACTION 'a', plant operation may continue for 14 days, provided HPCI is OPERABLE.

'D' is correct: (1) Turbine speed lowers; (2) 14 days, provided HPCI is OPERABLE. Correct for the reasons described above.

'A' is wrong: (1) Turbine trips on overspeed; (2) 14 days, provided HPCI is OPERABLE. Part (1) is plausible to the examinee who confuses the fact that flow transmitter output signal (i.e., the feedback signal to the Flow Controller) has failed upscale, with, instead, the Flow Controller output signal failing high. This is a fairly common problem regarding operator understanding of "Controllers". If the Flow Controller output signal were to fail high (such as it would if the flow transmitter signal were to fail downscale), then indeed the turbine would speed up and ultimately trip on overspeed.

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

'B' is wrong: (1) Turbine speed lowers; (2) 14 days, provided HPCI and ADS are both OPERABLE. Part (2) is a variant of Tech Spec 3.5.1 (ECCS), ACTION 'c.1'. That is the ACTION for an inoperable HPCI (not RCIC). If HPCI is inoperable, operators have 14 days to restore HPCI, provided that all of the remaining ECCS is OPERABLE (Core Spray, LPCI, ADS, as well as RCIC. Part (2) of this answer choice suggests that, along with HPCI (another high-pressure injection system redundant to RCIC), ADS (i.e., the ECCS system critical to rapidly depressuring the RPV should high-pressure injection not be able to provide adequate core cooling) must also be OPERABLE.

'C' is wrong: (1) Turbine trips on overspeed; (2) 14 days, provided HPCI and ADS are both OPERABLE. Plausible for the same reasons as that for choices 'A' and 'B'.

Question 92 Info		
Question Type:	Multiple Choice	
Status:	Active	
Always select on test?	No	
Authorized for practice?	No	
Points:	1.00	
Time to Complete:	4	
Difficulty:	2.50	
System ID:	1104381	
User-Defined ID:	REV 00, 11/17/14	
Cross Reference Number:	LLOT0380.10	
Topic:	(SRO) Predict RCIC response to flow transmitter failing upscale and determine TS required action	
Num Field 1:	3.1	
Num Field 2:	3.1	
Text Field:	217000 A2.10	
Comments:	<div> <div>Level</div> <div>SRO</div> <div>Tier</div> <div>2</div> <div>Group</div> <div>1</div> <div>KA # and Rating</div> <div>217000 A2.10 (3.1/3.1)</div> <div>KA Statement</div> <div>217000 RCIC</div> <div>Ability to (a) predict the impacts of the following on the REACTOR CORE ISOLATION COOLING SYSTEM (RCIC) ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: A2.10 Turbine control system failures</div> <div>References</div> <div>U/1 Tech Spec 3.5.1 (latest) U/1 Tech Spec 3.7.3 (latest)</div> <div>Examinee References</div> <div>None</div> <div>Learning Objective</div> <div>LLOT0380.10</div> <div>Question source</div> <div>New</div> <div>Question history</div> <div>None</div> <div>Cognitive level</div> <div>Higher</div> <div>10 CFR 55</div> <div>41.5, 43.2</div> <div>Comments</div> <div>None</div> </div>	

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

93

ID: 1104389

Points: 1.00

SRO

Unit 1 is operating at 100% power, with the following:

- Drywell cooling is maximized
- MCC D114-R-G is tagged out for repairs
- Drywell air temperature is 125°F

A loss of MCC D134-R-E occurs; as a result, drywell air temperature begins to rise.

Assume drywell air temperature rises at a constant rate of 5°F/hr for each drywell fan that is no longer operating.

WHICH ONE of the following identifies:

- (1) the approximate time it will take for drywell air temperature to exceed its Tech Spec limit, and
- (2) the Tech Spec time allowed for restoring drywell air temperature to within its Tech Spec limit?

- A. (1) 1 hour
(2) 8 hours
- B. (1) 2 hours
(2) 8 hours
- C. (1) 1 hour
(2) 24 hours
- D. (1) 2 hours
(2) 24 hours

Answer: B

Answer Explanation

All operators and ILT Candidates understand that the phrase "drywell cooling is maximized" means only the following: All 8 Unit Coolers are in service, with 1 fan operating in each of the Unit Coolers, with 1 Drywell Chilled Water (DWCW) Chiller operating and 2 DWCW Circ Pumps operating.

The following identifies the power supplies for the drywell unit cooler fans:

- MCC D114-R-G feeds 1A1V212, 1C1V212, 1E1V212, 1G1V212 (a total of 4 fans)
- MCC D124-R-G feeds 1B1V212, 1D1V212, 1F1V212, 1H1V212 (a total of 4 fans)
- MCC D134-R-E feeds 1A2V212, 1E2V212 (a total of 2 fans)
- MCC D134-R-H feeds 1C2V212, 1G2V212 (a total of 2 fans)
- MCC D144-R-H feeds 1D2V212, 1F2V212 (a total of 2 fans)
- MCC D144-R-E feeds 1B2V212, 1H2V212 (a total of 2 fans)

NOTE - all of these power supplies can be validated by reviewing 1S77.1.A (COL), pages 1 - 6.

Stem conditions indicate that MCC D114-R-G is out of service, yet "drywell cooling is maximized." this necessarily means that the fans fed from MCC's D134-R-E (2 fans) and D134-R-H (2 fans) are operating in place of the 4 fans that are not operating because of the MCC outage.

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

When MCC D134-R-E is lost, two fans trip (they are 1A2V212 and 1E2V212). The stated "assumption" that drywell air temperature rises at a constant rate of 5°F/hr for each fan that has been lost (2 fans) means that the air temperature is rising at a rate of 10°F/hr.

The Tech Spec 3.6.1.7 Drywell Average Air Temperature limit is 145°F. Therefore, starting at a temperature of 125°F, it will take 2 hours to reach the Tech Spec limit.

Per the TS 3.6.1.7 ACTION, operators have 8 hours to restore the temperature to within the limit.

'B' is correct: (1) 2 hours; (2) 8 hours. Correct for the reasons described above.

'A' is wrong: (1) 1 hour; (2) 8 hours. Part (1) assumes a total of 4 fans are lost when MCC D134-R-E is lost. This is plausible to the examinee who fails to recall that the Division 3 and Division 4 associated MCCs (i.e., D134 and D144, respectively) each power only two fans, as opposed to the Div 1 and Div 2 MCCs (i.e., D114 and D124, respectively) that each power 4 fans.

'C' is wrong: (1) 1 hour; (2) 24 hours. Part (1) is plausible for the same reasons as that for choice 'A'. Part (2) suggests the restoration time allowed by Tech Spec 3.6.2.1, ACTION 'b' when the 95°F suppression pool temperature limit is exceeded; plausible for that reason.

'D' is wrong: (1) 2 hours; (2) 24 hours. Part (2) is plausible for the same reason as that for choice 'C'.

Question 93 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	4
Difficulty:	3.00
System ID:	1104389
User-Defined ID:	REV 00, 11/17/14
Cross Reference Number:	NONE
Topic:	(SRO) Predict DW air temperature rise time and recall Tech Spec AOT to restore to within limits
Num Field 1:	3.6
Num Field 2:	3.8
Text Field:	223001 A2.10
Comments:	Level SRO Tier 2 Group 2 KA # and Rating 223001 A2.10 (3.6/3.8)

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

	KA Statement	223001 Primary CTMT and Auxiliaries Ability to (a) predict the impacts of the following on the PRIMARY CONTAINMENT SYSTEM AND AUXILIARIES; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: A2.10 High drywell temperature
	References	1S77.1.A (COL), Rev.3 U/1 Tech Spec 3.6.1.7 (latest) U/1 Tech Spec 3.6.2.1 (latest)
	Examinee References	None
	Learning Objective	No specified objective
	Question source	New
	Question history	None
	Cognitive level	Higher
	10 CFR 55	41.5, 43.2
	Comments	None

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

94

ID: 1104465

Points: 1.00

SRO

Unit 2 is operating at 100% power.

WHICH ONE of the following Control Rod problems would require a plant shutdown within 12 hours upon entry into the associated Tech Spec?

- A. With 7 rods already inoperable, and 8th rod is declared inoperable
- B. The average scram time for the 3 fastest rods in a 2-by-2 array is twice the allowable limit at all positions of insertion
- C. The average scram insertion time for all OPERABLE control rods exceeds the limit only for insertion from position 48 to position 39
- D. Two accumulators (for withdrawn rods) are declared inoperable due to internal leakage

Answer: C

Answer Explanation

'C' is correct: The average scram insertion time for all OPERABLE control rods exceeds the limit only for insertion from position 48 to position 39. Per Tech Spec 3.1.3.3, exceeding the limit the scram time limit at any point of insertion (39, 25, or 05) requires the ACTION to "be in HOT SHUTDOWN within 12 hours."

'A' is wrong: With 7 rods already inoperable, an 8th rod is declared inoperable. Per Tech Spec 3.1.3.1, ACTION 'c', the shutdown isn't required until a 9th rod is declared inoperable. Plausible to the examinee who does recall something about "8" rods being inoperable, but can't recall whether the limit is 8 or if the ACTION is required when the 8th becomes inoperable.

'B' is wrong: The average scram time for the 3 fastest rods in a 2-by-2 array is twice the allowable limit at all positions of insertion. Per Tech Spec 3.1.3.2, exceeding the scram time limit at any point of insertion (regardless of the degree to which it is exceeded) requires the associated ACTION. However, per that ACTION, continued plant operation is permitted for at least 60 days. Plausible to the examinee who is distracted by what appears to be an unacceptably long scram time ("twice the limit").

'D' is wrong: Two accumulators (for withdrawn rods) are declared inoperable due to internal leakage. Per Tech Spec 3.1.3.5, ACTION a.2 applies. Because the accumulators are inoperable due to internal leakage problems, and not because of a loss of CRD charging water header pressure, the only action is declare the two associated rods inoperable. Plausible to the examinee who is distracted by the fact that the accumulator are for withdrawn rods.

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

Question 94 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	4
Difficulty:	2.50
System ID:	1104465
User-Defined ID:	REV 00, 11/17/14
Cross Reference Number:	LLOT0060.12
Topic:	(SRO) Recognize control rod problem requiring plant shutdown within 12 hours upon Tech Spec entry
Num Field 1:	4.0
Num Field 2:	4.7
Text Field:	201003 2.2.22
Comments:	<div> <div>Level</div> <div>SRO</div> </div> <div> <div>Tier</div> <div>2</div> </div> <div> <div>Group</div> <div>2</div> </div> <div> <div>KA # and Rating</div> <div>201003 2.2.40 (3.4/4.7)</div> </div> <div> <div>KA Statement</div> <div>201003 Control Rod Drive Mechanisms 2.2.22 Knowledge of limiting conditions for operations and safety limits.</div> </div> <div> <div>References</div> <div>U/2 Tech Spec 3.1.3.1 (latest) U/2 Tech Spec 3.1.3.2 (latest) U/2 Tech Spec 3.1.3.3 (latest) U/2 Tech Spec 3.1.3.4 (latest)</div> </div> <div> <div>Examinee References</div> <div>None</div> </div> <div> <div>Learning Objective</div> <div>LLOT0060.12</div> </div> <div> <div>Question source</div> <div>New</div> </div> <div> <div>Question history</div> <div>None</div> </div> <div> <div>Cognitive level</div> <div>Lower</div> </div> <div> <div>10 CFR 55</div> <div>43.2</div> </div> <div> <div>Comments</div> <div>None</div> </div>

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

95

ID: 1104626

Points: 1.00

SRO

Unit 1 is operating at 100% power when the 1A Circ Water Pump trips.

After the transient:

- Condenser vacuum is 26" Hg Vac, steady
- Reactor power is 92%, steady

WHICH ONE of the following identifies the reactivity management classification for this event?

- A. Significance Level 3 (3-8)
- B. Significance Level 4 (4-1)
- C. Significance Level 4 (4-8)
- D. Significance Level 5 (5-1)

Answer: B

Answer Explanation

Refer to OP-AA-300-1540, where Reference 6.2 is the "BWROG RCRC Guidelines for Excellence, Section 5.0, Monitoring of Reactivity Management Issues, Rev 15." When a reactivity event occurs, OP-AA-300-1540, section 4.8.1 directs personnel to use Ref. 6.2 (described above) to classify the event level.

Refer to the BWROG document. Section III (Definitions), specifically Definition 'F' defines a "Reactivity Management Precursor (SL 4)". From this definition, alone, it's not likely that a correct classification can be made for this particular event.

Exhibit 4 of the BWROG document, however, lists specific "Examples" of SL 4 events.

'B' is correct: Significance Level 4 (4-1). This "Example" (4-1) applies to a power change of $\geq 1\%$ that results from operator actions directed from an approved procedure. The examinee is expected to recognize that the Circ Water Pump trip, itself, did not produce the down-power. Rather, the pump trip produced a degrading main condenser vacuum, causing operators to enter OT-116 (Loss of Main Condenser Vacuum) and reduce power to stabilize the vacuum.

'A' is wrong: Significance Level 3 (3-8). Although the power change was $\geq 1\%$, it was not directly caused by the CW Pump trip (equipment problems). Plausible to the examinee who fails to recognize that the CW Pump trip, by itself, cannot cause a power reduction.

'C' wrong: Significance Level 4 (4-8). The power change was $\geq 1\%$ and was not directly caused by the CW Pump trip (equipment problems). Plausible to the examinee who cannot effectively use Exhibit 4.

'D' is wrong: Significance Level 5 (5-1). See Exhibit 5...an event is an SL 5 only when it does not classify as an SL 1 through SL 4 event. Although this power change did result from operator action directed from an approved procedure (OT-116) and was $\geq 1\%$, it did not occur after a 72-hour notice. Plausible to the examinee who cannot effectively use Exhibit 4.

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

Question 95 Info		
Question Type:	Multiple Choice	
Status:	Active	
Always select on test?	No	
Authorized for practice?	No	
Points:	1.00	
Time to Complete:	5	
Difficulty:	2.00	
System ID:	1104626	
User-Defined ID:	REV 00, 11/17/14	
Cross Reference Number:	LGSOPS2010.12	
Topic:	(SRO) Classify Reactivity Management Event - Trip of 1A Circ Water Pump	
Num Field 1:	4.3	
Num Field 2:	4.6	
Text Field:	295014 2.1.37	
Comments:	<div> <div>Level</div> <div>SRO</div> </div> <div> <div>Tier</div> <div>1</div> </div> <div> <div>Group</div> <div>2</div> </div> <div> <div>KA # and Rating</div> <div>295014 2.1.37 (4.3/4.6)</div> </div> <div> <div>KA Statement</div> <div>295014 Inadvertent Reactivity Addition 2.1.37 Knowledge of procedures, guidelines, or limitations associated with reactivity management.</div> </div> <div> <div>References</div> <div>OP-AA-300-1540, Rev.10 BWROG Reactivity Controls Review Committee (RCRC) Guideline for Excellence - Section 5.0, Monitoring of Reactivity Management Issues, Rev.15</div> </div> <div> <div>Examinee References</div> <div>Both of the above references</div> </div> <div> <div>Learning Objective</div> <div>LGSOPS2010.12</div> </div> <div> <div>Question source</div> <div>Bank 1007188</div> </div> <div> <div>Question history</div> <div>None</div> </div> <div> <div>Cognitive level</div> <div>Higher</div> </div> <div> <div>10 CFR 55</div> <div>43.6</div> </div> <div> <div>Comments</div> <div>None</div> </div>	

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

96

ID: 1104467

Points: 1.00

SRO

LGS has declared a GENERAL EMERGENCY.

Command & Control has been transferred to the TSC.

Consider the following ERO personnel:

1. Shift Manager / Shift Emergency Director
2. Radiation Protection Manager
3. Station Emergency Director

WHICH ONE of the following identifies (from the above list) who can **APPROVE** an Emergency Exposure personnel dose?

- A. 1 or 3, only
- B. 2 or 3, only
- C. 2, only
- D. 3, only

Answer: D

Answer Explanation

Refer to EP-AA-113-F-02 (Authorization for Emergency Exposure). The Shift Manager / Shift Emergency Director may approve prior to transferring Command and Control to the Station Emergency Director. After the transfer of command and control, only the Station Emergency Director can approve the emergency exposure.

'D' is correct: 3, only. Correct for the reasons described above.

'A' is wrong: 1 or 3, only. Plausible to the examinee who recognizes that the Shift Manager is always the initial "Emergency Director" and so believes that he/she can still approve the exposure even after transferring command and control.

'B' is wrong: 2 or 3, only. Plausible to the examinee who recalls that the Radiation Protection Manager (RPM) is involved in the process (as shown on EP-AA-113-F-02) but who forgets that the RPM only "reviews" the exposure request; he/she cannot approve the request.

'C' is wrong: 2, only. Plausible to the examinee who recognizes that the Station Emergency Director has overall command and control of the ERO, but who believes that the expertise that only the RPM possesses is necessary to ultimately approve the exposure request.

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

Question 96 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	3
Difficulty:	2.00
System ID:	1104467
User-Defined ID:	REV 00, 11/17/14
Cross Reference Number:	NONE
Topic:	(SRO) Recall who can Approve an Emergency Exposure request
Num Field 1:	3.2
Num Field 2:	3.7
Text Field:	2.3.4
Comments:	<div> <div>Level</div> <div>SRO</div> </div> <div> <div>Tier</div> <div>3</div> </div> <div> <div>Group</div> <div>N/A</div> </div> <div> <div>KA # and Rating</div> <div>2.3.4 (3.2/3.7)</div> </div> <div> <div>KA Statement</div> <div>2.3.4 Knowledge of radiation exposure limits under normal or emergency conditions.</div> </div> <div> <div>References</div> <div>EP-AA-113-F-02, Rev.B</div> </div> <div> <div>Examinee</div> <div>None</div> </div> <div> <div>References</div> <div></div> </div> <div> <div>Learning Objective</div> <div>No specified objective</div> </div> <div> <div>Question source</div> <div>New</div> </div> <div> <div>Question history</div> <div>None</div> </div> <div> <div>Cognitive level</div> <div>Lower</div> </div> <div> <div>10 CFR 55</div> <div>43.4</div> </div> <div> <div>Comments</div> <div>None</div> </div>

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

97

ID: 1104468

Points: 1.00

SRO

LGS has declared an ALERT and has completed all required notifications.

At 1300 hours:

- SITE AREA EMERGENCY (SAE) is declared

At 1313 hours:

- GENERAL EMERGENCY (GE) is declared
- SAE notifications have NOT yet been transmitted

WHICH ONE of the following describes the State/Local notification requirements for the situation above?

- A. Do not make the SAE notification; instead, complete the GE notification no later than 1328 hours.
- B. Do not make the SAE notification, but do notify State/Locals that the event has been escalated. Then complete the GE notification no later than 1328 hours.
- C. If possible, complete the GE notification (in lieu of the SAE) no later than 1315 hours. Otherwise, complete the SAE notification no later than 1315 hours and the GE notification no later than 1328 hours.
- D. Complete the SAE notification no later than 1328 hours, then complete the GE notification no later than 1343 hours.

Answer: C

Answer Explanation

Refer to EP-AA-111, section 4.1, 2nd NOTE, which reads: "If a higher classification is made prior to transmitting an event notification, then notification for the higher classification can supercede the previous event notification, provided that it can be performed within the 15-minute timeframe of the previous event"... "IF the notification of a higher classification cannot be performed within the 15-minute timeframe of the previous event, then the previous event notification is required within its 15-minute timeframe, and the subsequent event notification is required within its 15-minute timeframe."

'C' is correct: If possible, complete the GE notification (in lieu of the SAE) no later than 1315 hours. Otherwise, complete the SAE notification no later than 1315 hours and the GE notification no later than 1328 hours. Correct for the reasons described above.

'A' is wrong: Do not make the SAE notification; instead, complete the GE notification no later than 1328 hours. Plausible to the inexperienced SRO Candidate who believes that each EAL notification should be completed before regarding the escalated EAL.

'B' is wrong: Do not make the SAE notification, but do notify State/Locals that the event has been escalated. Then complete the GE notification no later than 1328 hours. Plausible to the inexperienced SRO Candidate who believes that although the actual SAE notification is not required (because it has already escalated to a GE), nonetheless, offsite authorities should be made made aware in advance so as to provide them an opportunity to plan for the GE.

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

'D' is wrong: Complete the SAE notification no later than 1328 hours, then complete the GE notification no later than 1343 hours. Plausible to the inexperienced SRO Candidate who recalls only the 15-minute notification requirements and believe those notifications should be made in the order of the declared EALs.

Question 97 Info		
Question Type:	Multiple Choice	
Status:	Active	
Always select on test?	No	
Authorized for practice?	No	
Points:	1.00	
Time to Complete:	3	
Difficulty:	2.50	
System ID:	1104468	
User-Defined ID:	REV 00, 11/17/14	
Cross Reference Number:	NONE	
Topic:	(SRO) Recall Time Limits for EAL Notification	
Num Field 1:	2.4	
Num Field 2:	4.4	
Text Field:	2.4.38	
Comments:	<div> <div>Level</div> <div>SRO</div> </div> <div> <div>Tier</div> <div>3</div> </div> <div> <div>Group</div> <div>N/A</div> </div> <div> <div>KA # and Rating</div> <div>2.4.38 (2.4/4.4)</div> </div> <div> <div>KA Statement</div> <div>2.4.38 Ability to take actions called for in the facility emergency plan, including supporting or acting as emergency coordinator if required.</div> </div> <div> <div>References</div> <div>EP-AA-111, Rev.18</div> </div> <div> <div>Examinee</div> <div>None</div> </div> <div> <div>References</div> <div></div> </div> <div> <div>Learning</div> <div>No specified objective</div> </div> <div> <div>Objective</div> <div></div> </div> <div> <div>Question source</div> <div>Bank 985666</div> </div> <div> <div>Question history</div> <div>None</div> </div> <div> <div>Cognitive level</div> <div>Lower</div> </div> <div> <div>10 CFR 55</div> <div>43.5</div> </div> <div> <div>Comments</div> <div>None</div> </div>	

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

98

ID: 1104484

Points: 1.00

SRO

Unit 1 is operating at 100% power.

WHICH ONE of the following identifies how often the Unit 1 CRS is required to perform a **solo** walkdown of MCR panels, per OP-AA-103-102 (Watchstanding Practices)?

- A. Every 2 hours
- B. Every 4 hours
- C. Every 6 hours
- D. Once per shift

Answer: B

Answer Explanation

Per OP-AA-103-102, step 4.4.2.1: every 4 hours (solo). Per step 4.4.2.2, a paired (with the RO) walkdown is performed once per shift.

'B' is correct: Every 4 hours. Correct for the reasons described above.

'A' is wrong: Every 2 hours. Plausible to the examinee who does not recall the OP-AA-103-102 requirement.

'C' is wrong: Every 6 hours. This suggests a "twice per shift" requirements. Plausible to the examinee who does not recall the OP-AA-103-102 requirement.

'D' is wrong: Once per shift. Plausible to the examinee who believes that the "Command and Control" function of the Unit Supervisor (CRS) affords him/her enough exposure to the MCR panels; therefore, a once per shift solo walkdown is sufficient.

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

Question 98 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	2
Difficulty:	2.00
System ID:	1104484
User-Defined ID:	REV 00, 11/17/14
Cross Reference Number:	LGSOPS2005A.3
Topic:	(SRO) Watchstanding Practices - Recall SRO requirement to walkdown MCR panels
Num Field 1:	3.8
Num Field 2:	4.2
Text Field:	2.1.1
Comments:	<div> <div>Level</div> <div>SRO</div> </div> <div> <div>Tier</div> <div>3</div> </div> <div> <div>Group</div> <div>N/A</div> </div> <div> <div>KA # and Rating</div> <div>2.1.1 (3.8/4.2)</div> </div> <div> <div>KA Statement</div> <div>2.1.1 Knowledge of conduct of operations requirements.</div> </div> <div> <div>References</div> <div>OP-AA-103-102, Rev.12</div> </div> <div> <div>Examinee</div> <div>None</div> </div> <div> <div>References</div> <div></div> </div> <div> <div>Learning</div> <div>LGSOPS2005A.3</div> </div> <div> <div>Objective</div> <div></div> </div> <div> <div>Question source</div> <div>Bank 986305</div> </div> <div> <div>Question history</div> <div>None</div> </div> <div> <div>Cognitive level</div> <div>Lower</div> </div> <div> <div>10 CFR 55</div> <div>41.10, 43.5</div> </div> <div> <div>Comments</div> <div>None</div> </div>

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

99

ID: 1104486

Points: 1.00

SRO

Unit 1 is operating at 100% power, with the following:

- Emergency 220 KV Switching has been performed to support Emergent Maintenance on the 105 breaker

WHICH ONE of the following (per OP-AA-108-107-1002) identifies:

- (1) the required oversight for maintenance on the 105 breaker, and
- (2) the organization responsible for operation of the breaker?

- A. (1) Constant coverage
(2) PECO
- B. (1) None; MCR notification required
(2) PECO
- C. (1) Constant coverage
(2) LGS OPS
- D. (1) None; MCR notification required
(2) LGS OPS

Answer: C

Answer Explanation

Refer to OP-AA-108-107-1002, Attachment 1. The examinee is expected to recognize (by review of the E-0001 drawing) that the "105" breaker is a "Start-Up Source" breaker (for the 10 Station Aux Bus). As such, the left-most column of Attachment 1 applies...which lists "Emergent Maintenance" as an 'A' for the required oversight; i.e., "constant coverage". Refer to Attachment 3, which lists the transmission equipment under the responsibility/ownership of LGS. The 105 breaker is on this list, meaning that it is under the responsibility/ownership of LGS.

'C' is correct: (1) Constant coverage (2) LGS OPS. Correct for the reasons described above.

'A' is wrong: (1) Constant coverage; (2) PECO. Part (2) is plausible to the examinee who fails to thoroughly review Attachment 3.

'B' is wrong: (1) None; MCR notification required; (2) PECO. Part (1) is plausible to the examinee who cannot effectively use the E-0001 drawing to determine that the "105" breaker is in fact a "Start-up Source" breaker. Part (2) is plausible for the same reason as that for choice 'A'.

'D' is wrong: (1) None; MCR notification required; (2) LGS OPS. Part (1) is plausible for the same reason as that for choice 'B'.

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

Question 99 Info																												
Question Type:	Multiple Choice																											
Status:	Active																											
Always select on test?	No																											
Authorized for practice?	No																											
Points:	1.00																											
Time to Complete:	5																											
Difficulty:	2.50																											
System ID:	1104486																											
User-Defined ID:	REV 00, 11/17/14																											
Cross Reference Number:	LGSOPS2010.30.A.3																											
Topic:	(SRO) Apply OP-AA-108-107-1002, TSO Interface																											
Num Field 1:	2.6																											
Num Field 2:	3.8																											
Text Field:	2.2.17																											
Comments:	<table><tr><td>Level</td><td>SRO</td></tr><tr><td>Tier</td><td>3</td></tr><tr><td>Group</td><td>N/A</td></tr><tr><td>KA # and Rating</td><td>2.2.17 (2.6/3.8)</td></tr><tr><td>KA Statement</td><td>Knowledge of the process for managing maintenance activities during power operations, such as risk assessments, work prioritization, and coordination with the transmission system operator.</td></tr><tr><td>References</td><td>OP-AA-108-107-1002, Rev.7 Electrical Drawing E-0001, Sheet 1, Rev.29</td></tr><tr><td>Examinee References</td><td>OP-AA-108-107-1002 E-0001, Sheet 1 (Switchyard portion only)</td></tr><tr><td>Learning Objective</td><td>LGSOPS2010.30.A.3</td></tr><tr><td>Question source</td><td>Bank 986905, which is a MODIFIED version of Question #96 from the LGS 2012 ILT NRC Exam...Modified as follows: Changed the Switchyard breaker in the stem conditions (from what was the "515" breaker, to now the "105" breaker), which results in changing both parts of the two-part answer.</td></tr><tr><td>Question history</td><td>Pre-modified version appeared on LGS 2012 ILT NRC Exam</td></tr><tr><td>Cognitive level</td><td>Higher</td></tr><tr><td>10 CFR 55</td><td>43.5</td></tr><tr><td>Comments</td><td>None</td></tr></table>		Level	SRO	Tier	3	Group	N/A	KA # and Rating	2.2.17 (2.6/3.8)	KA Statement	Knowledge of the process for managing maintenance activities during power operations, such as risk assessments, work prioritization, and coordination with the transmission system operator.	References	OP-AA-108-107-1002, Rev.7 Electrical Drawing E-0001, Sheet 1, Rev.29	Examinee References	OP-AA-108-107-1002 E-0001, Sheet 1 (Switchyard portion only)	Learning Objective	LGSOPS2010.30.A.3	Question source	Bank 986905, which is a MODIFIED version of Question #96 from the LGS 2012 ILT NRC Exam...Modified as follows: Changed the Switchyard breaker in the stem conditions (from what was the "515" breaker, to now the "105" breaker), which results in changing both parts of the two-part answer.	Question history	Pre-modified version appeared on LGS 2012 ILT NRC Exam	Cognitive level	Higher	10 CFR 55	43.5	Comments	None
Level	SRO																											
Tier	3																											
Group	N/A																											
KA # and Rating	2.2.17 (2.6/3.8)																											
KA Statement	Knowledge of the process for managing maintenance activities during power operations, such as risk assessments, work prioritization, and coordination with the transmission system operator.																											
References	OP-AA-108-107-1002, Rev.7 Electrical Drawing E-0001, Sheet 1, Rev.29																											
Examinee References	OP-AA-108-107-1002 E-0001, Sheet 1 (Switchyard portion only)																											
Learning Objective	LGSOPS2010.30.A.3																											
Question source	Bank 986905, which is a MODIFIED version of Question #96 from the LGS 2012 ILT NRC Exam...Modified as follows: Changed the Switchyard breaker in the stem conditions (from what was the "515" breaker, to now the "105" breaker), which results in changing both parts of the two-part answer.																											
Question history	Pre-modified version appeared on LGS 2012 ILT NRC Exam																											
Cognitive level	Higher																											
10 CFR 55	43.5																											
Comments	None																											

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

100

ID: 1104488

Points: 1.00

SRO

Both Units are operating at 100% power when the MCR is evacuated due to a fire.

25 minutes later:

- Operators establish control of the Units from the Remote Shutdown Panels
- Fire Brigade extinguishes the MCR fire and reports significant damage to MCR equipment

WHICH ONE of the following identifies the **HIGHEST** level of emergency classification for this event?

- A. Site Area Emergency - for the fire
- B. Site Area Emergency - for the MCR evacuation
- C. Alert - for the fire
- D. Alert - for the MCR evacuation

Answer: B

Answer Explanation

Refer to EP-AA-1008, LGS EAL Hot Matrix. The MCR fire (i.e., a fire in the Control Enclosure) with damage to MCR equipment meets the ALERT threshold of EAL HA3. The fact that it took longer than 15 minutes for operators to establish plant control from the RSPs meets the SITE AREA EMERGENCY threshold of EAL HS2.

'B' is correct: Site Area Emergency - for the MCR evacuation. Correct for the reasons described above.

'A' is wrong: Site Area Emergency - for the fire. There is no SAE level of EAL for a fire; plausible to the examinee who is distracted more by the fact that the fire not only took longer than 15 minutes to extinguish but was also one that causes significant damage to the MCR.

'C' is wrong: Alert - for the fire. Plausible to the examinee who doesn't recognize the significance of the fact that it took 25 minutes to gain plant control but who does recall that the fire meets the threshold for EAL HA3.

'D' is wrong: Alert - for the MCR evacuation. Plausible to the examinee who recalls that the MCR evacuation, alone, is an ALERT per EAL HA2, but doesn't recognize the significance of the fact that it took 25 minutes to gain plant control afterwards.

EXAMINATION ANSWER KEY

LGS 2015 ILT NRC EXAM

Question 100 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	3
Difficulty:	2.50
System ID:	1104488
User-Defined ID:	REV 00, 11/17/14
Cross Reference Number:	NONE
Topic:	(SRO) Determine HIGHEST EAL for combined MCR fire and evacuation
Num Field 1:	2.9
Num Field 2:	4.6
Text Field:	2.4.41
Comments:	<div> <div>Level</div> <div>SRO</div> <div>Tier</div> <div>3</div> <div>Group</div> <div>N/A</div> <div>KA # and Rating</div> <div>2.4.41 (2.9/4.6)</div> <div>KA Statement</div> <div>2.4.41 Knowledge of the emergency action level thresholds and classifications.</div> <div>References</div> <div>EP-AA-1008, Rev.26</div> <div>Examinee</div> <div>None</div> <div>References</div> <div></div> <div>Learning Objective</div> <div>no specified objective</div> <div>Question source</div> <div>New</div> <div>Question history</div> <div>None</div> <div>Cognitive level</div> <div>Lower</div> <div>10 CFR 55</div> <div>43.5</div> <div>Comments</div> <div>None</div> </div>

EXAMINATION ANSWER KEY (ANSWERS ONLY)

LGS 2015 ILT NRC EXAM - SRO

1	ID: 1098269	Points: 1.00
Answer:	D	
2	ID: 1098270	Points: 1.00
Answer:	A	
3	ID: 1098287	Points: 1.00
Answer:	C	
4	ID: 1098291	Points: 1.00
Answer:	D	
5	ID: 1104184	Points: 1.00
Answer:	B	
6	ID: 1098294	Points: 1.00
Answer:	B	
7	ID: 1098325	Points: 1.00
Answer:	D	
8	ID: 1098327	Points: 1.00
Answer:	A	
9	ID: 1102907	Points: 1.00
Answer:	D	
10	ID: 1098329	Points: 1.00
Answer:	C	
11	ID: 1098330	Points: 1.00
Answer:	B	

EXAMINATION ANSWER KEY (ANSWERS ONLY)

LGS 2015 ILT NRC EXAM - SRO

12 ID: 1098331 Points: 1.00

Answer: A

13 ID: 1098336 Points: 1.00

Answer: C

14 ID: 1098344 Points: 1.00

Answer: D

15 ID: 1098353 Points: 1.00

Answer: B

16 ID: 1098424 Points: 1.00

Answer: C

17 ID: 1098425 Points: 1.00

Answer: C

18 ID: 1098446 Points: 1.00

Answer: C

19 ID: 1098470 Points: 1.00

Answer: B

20 ID: 1098495 Points: 1.00

Answer: D

21 ID: 1098544 Points: 1.00

Answer: D

EXAMINATION ANSWER KEY (ANSWERS ONLY)

LGS 2015 ILT NRC EXAM - SRO

22 ID: 1098605 Points: 1.00

Answer: B

23 ID: 1098611 Points: 1.00

Answer: B

24 ID: 1109928 Points: 1.00

Answer: B

25 ID: 1110346 Points: 1.00

Answer: C

26 ID: 1102330 Points: 1.00

Answer: A

27 ID: 1102331 Points: 1.00

Answer: D

28 ID: 1102409 Points: 1.00

Answer: B

29 ID: 1102424 Points: 1.00

Answer: B

30 ID: 1102426 Points: 1.00

Answer: C

31 ID: 1102445 Points: 1.00

Answer: C

32 ID: 1104773 Points: 1.00

Answer: B

EXAMINATION ANSWER KEY (ANSWERS ONLY)

LGS 2015 ILT NRC EXAM - SRO

33 ID: 1102449 Points: 1.00

Answer: D

34 ID: 1102450 Points: 1.00

Answer: A

35 ID: 1102542 Points: 1.00

Answer: C

36 ID: 1102543 Points: 1.00

Answer: A

37 ID: 1102564 Points: 1.00

Answer: B

38 ID: 1102594 Points: 1.00

Answer: B

39 ID: 1102599 Points: 1.00

Answer: A

40 ID: 1102663 Points: 1.00

Answer: D

41 ID: 1102684 Points: 1.00

Answer: A

42 ID: 1102685 Points: 1.00

Answer: B

EXAMINATION ANSWER KEY (ANSWERS ONLY)

LGS 2015 ILT NRC EXAM - SRO

43 ID: 1102687 Points: 1.00

Answer: C

44 ID: 1102692 Points: 1.00

Answer: A

45 ID: 1104186 Points: 1.00

Answer: D

46 ID: 1102745 Points: 1.00

Answer: B

47 ID: 1102751 Points: 1.00

Answer: C

48 ID: 1102752 Points: 1.00

Answer: A

49 ID: 1116786 Points: 1.00

Answer: D

50 ID: 1102765 Points: 1.00

Answer: A

51 ID: 1103345 Points: 1.00

Answer: C

52 ID: 1103365 Points: 1.00

Answer: A

53 ID: 1103385 Points: 1.00

Answer: D

EXAMINATION ANSWER KEY (ANSWERS ONLY)

LGS 2015 ILT NRC EXAM - SRO

54 ID: 1103389 Points: 1.00

Answer: B

55 ID: 1103390 Points: 1.00

Answer: B

56 ID: 1104787 Points: 1.00

Answer: D

57 ID: 1103428 Points: 1.00

Answer: A

58 ID: 1103429 Points: 1.00

Answer: C

59 ID: 1103430 Points: 1.00

Answer: C

60 ID: 1103431 Points: 1.00

Answer: C

61 ID: 1103474 Points: 1.00

Answer: D

62 ID: 1103788 Points: 1.00

Answer: D

63 ID: 1103809 Points: 1.00

Answer: D

EXAMINATION ANSWER KEY (ANSWERS ONLY)

LGS 2015 ILT NRC EXAM - SRO

64 ID: 1103884 Points: 1.00

Answer: A

65 ID: 1103891 Points: 1.00

Answer: D

66 ID: 1103894 Points: 1.00

Answer: B

67 ID: 1103944 Points: 1.00

Answer: D

68 ID: 1103946 Points: 1.00

Answer: D

69 ID: 1103947 Points: 1.00

Answer: D

70 ID: 1103964 Points: 1.00

Answer: B

71 ID: 1103966 Points: 1.00

Answer: C

72 ID: 1104004 Points: 1.00

Answer: A

73 ID: 1104005 Points: 1.00

Answer: B

74 ID: 1104006 Points: 1.00

Answer: D

EXAMINATION ANSWER KEY (ANSWERS ONLY)

LGS 2015 ILT NRC EXAM - SRO

75 ID: 1104526 Points: 1.00

Answer: A

76 ID: 1102804 Points: 1.00

Answer: A

77 ID: 1102806 Points: 1.00

Answer: D

78 ID: 1102809 Points: 1.00

Answer: C

79 ID: 1102824 Points: 1.00

Answer: B

80 ID: 1102826 Points: 1.00

Answer: B

81 ID: 1104650 Points: 1.00

Answer: B

82 ID: 1102864 Points: 1.00

Answer: D

83 ID: 1102865 Points: 1.00

Answer: B

84 ID: 1102904 Points: 1.00

Answer: B

EXAMINATION ANSWER KEY (ANSWERS ONLY)

LGS 2015 ILT NRC EXAM - SRO

85 **ID: 1102906** **Points: 1.00**

Answer: D

86 **ID: 1104204** **Points: 1.00**

Answer: B

87 **ID: 1104205** **Points: 1.00**

Answer: B

88 **ID: 1104206** **Points: 1.00**

Answer: B

89 **ID: 1104267** **Points: 1.00**

Answer: B

90 **ID: 1104304** **Points: 1.00**

Answer: B

91 **ID: 1104380** **Points: 1.00**

Answer: B

92 **ID: 1104381** **Points: 1.00**

Answer: D

93 **ID: 1104389** **Points: 1.00**

Answer: B

94 **ID: 1104465** **Points: 1.00**

Answer: C

95 **ID: 1104626** **Points: 1.00**

Answer: B

EXAMINATION ANSWER KEY (ANSWERS ONLY)

LGS 2015 ILT NRC EXAM - SRO

96 **ID: 1104467** **Points: 1.00**

Answer: D

97 **ID: 1104468** **Points: 1.00**

Answer: C

98 **ID: 1104484** **Points: 1.00**

Answer: B

99 **ID: 1104486** **Points: 1.00**

Answer: C

100 **ID: 1104488** **Points: 1.00**

Answer: B